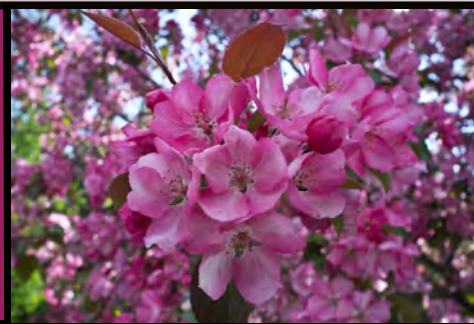


Plant Science Says



Volume 16, No. 4

May, 2014

PSPP Graduation Ceremony & Reception



All PSPP faculty and staff are invited to attend a Graduation Reception and Awards Ceremony honoring Spring 2014 graduates on Friday, May 2, from 3:00-5:00 p.m. in

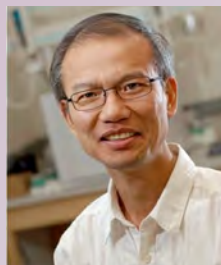
108 Plant BioScience Building/Mathre Courtyard. The awards ceremony will begin at 4:00. Hors d'oeuvres will be served along with beer and wine.

Promotion and Tenure

Faculty members Chaofu Lu and Kevin Wanner went through the promotion and tenure process this past year. Kevin and Chaofu were both awarded promotion to Associate Professor with tenure. Congratulations to both of you!



Dr. Kevin Wanner



Dr. Chaofu Lu

Lab Focus

Schutter Diagnostic Lab By Linnea Skoglund

Plant Clinics are a standard fixture at most land grant universities. One has existed at MSU in one form or another since the 1970s and earlier. The Schutter Diagnostic Lab (SDL) was created with a contribution from John and Grace Schutter when the new Plant Bioscience Facility opened in 1999. We provide identification services for plants, plant diseases, insect infestation, insect damage, abiotic problems and mushrooms as well as management recommendations. We rely on many campus specialists (Toby Day, Cathy Cripps, Jane Mangold, Fabian Menalled, Bill Grey, Barry Jacobsen, Nina Zidack, Kevin Wanner, Mike Ivie, Clain Jones and others) to accomplish this. In addition, we provide training opportunities to students, extension

agents, master gardeners, consultants, landscape professionals and homeowners through internships and workshops. Lab facilities are stretched across three buildings; the main lab at 121 PBB, entomology lab at 56 ML and the plant ID lab at 719 LJ.

Currently, the clinic is fully staffed with three diagnosticians: plant disease and abiotics (Linnea Skoglund, PhD), arthropod pests (Laurie Kerzicnik, PhD), and plant identification and herbicide injury (Hilary Parkinson, MSc). The entire group is



Laurie Kerzicnik, insect diagnostician, Mary Burrows, director, Linnea Skoglund, disease diagnostic, and Hilary Parkinson, plant ID diagnostician, at the MSU Ag Fair, Nov, 2013.

overseen by Mary Burrows, extension plant pathologist. The diagnosticians process about 2000 samples a year, mostly in the summer months. About half of these samples are sent in by county extension agents, with the remainder from consultants, landscape professional and homeowners.

The SDL is a member of the Great Plains region (Great Plains Diagnostic Network) of the National Plant Diagnostic Network (NPDN). We are active on committees and organize a webinar series every winter on topics of interest to diagnosticians and specialists. We collaborate with state (MDA) and federal agencies (APHIS/USDA) to safeguard Montana agriculture, forests and urban landscapes. For example, we carry



A typical summer morning in the plant clinic after the mail has arrived.

out annual survey testing for Plum Pox virus, a federally regulated pest that could destroy the \$4 million cherry industry in Montana.

Some of our recent impacts:

- Identified Alfalfa downy mildew and Goss's wilt of corn, which have not been seen in Montana for 30 years.

- Identified fungicide resistance in *Ascochyta* isolates.

- Confirmed a lack of insect wood borers for a classic guitar collection for a man's insurance claim.

- Confirmed the presence of mange scabies mites from a dog sample submitted by a veterinary clinic, making their treatment options effective and efficient.

- Confirmed a positive identification of bed bugs for 2 renters in apartment complexes to present to their landlords.

- Identified insect larvae that were in a pond surrounding cattle and confirmed that they were not livestock pests that required any treatment.

- Fielded several phone calls about hobo spiders and caller's exaggerated fear of them.

Plant diagnostics is a fun, interesting, challenging and important discipline in plant sciences. If you are a student, consider an internship in the disease or entomology labs. And the next time you have an odd or unusual question that stumps even Google, try the plant diagnosticians. Some of the things we are asked:

"Can I make jam from those "grapes" that suddenly appeared on my back fence?"

No, it's likely they are the toxic white bryony. Submit to verify.

"Can my horse eat that new yellow plant with the long spiny bracts?"

Not if it is yellow starthistle. Submit to verify.

"Is that spider with the 'boxing gloves' going to poison my child?"

Don't panic, the only spider poisonous to people in Montana is the black widow. Submit for ID.

You might be surprised at our eclectic knowledge. And if we don't know, we often know the person who will.

Growing Food, Not Feed

"Courtesy of Martha Mintz, John Deere's The Furrow Magazine. Copyright (symbol) 2014 Deere & Company. All worldwide rights reserved."

It appears at first glance that Bozeman, Montana, farmer Bruce Wright has planted a terribly contaminated run of oat seed. The plants are stubby, barely grazing the knee. Instead of the familiar tightly clustered seed head, the oats are dangling loosely from a sprawling head.

The field seems to be overrun with a stunted wild oat. But what looks wrong is oh-so-right for those suffering from gluten intolerance or celiac disease. Wright is one of a select few farmers growing the high protein, gluten-free specialty oat PrOatina.

Developed at Montana State University, PrOatina is a naked oat that, when managed correctly, tests at double the protein of standard oats.

The big sell for Wright is the fact that this oat is gluten-free, but protein content is the star for PrOatina developer David Sands, MSU Professor of plant pathology.

"High quality grain proteins are needed for people to rise to their maximum potential," Sands says. "Right now people eat high starch grains because they are cheaper. We're feeding people, but we need to 'food' them."

By putting the focus on nutrition, Sands believes plant breeders can address issues such as obesity, heart disease, and diabetes. But plants don't particularly care to produce protein. Seeds have evolved to maximize germination and growth, not to be ideal foods for people and animals, Sands says.

"Breeding strictly for yield can exaggerate nutritional inadequacies. As an agronomist, I have to consider things like yield. But looking to the future, I also have to address nutrition and disease prevention."

Sands often looks to the past to find healthy "new" grain sources for today.

"Ancient people did a great job of selecting what's good and what's not. If we ignore what they learned then, we get what we deserve," he says.

Looking to the crops ancients thrived on led him to develop four high protein, gluten-free crops: Montina (Indian ricegrass), Camelina, Timtana (Timothy grass), and PrOatina.

Sands says he and fellow researchers really got lucky with PrOatina.



At 20 percent protein, rice-like PrOatina oats are a good first step toward the super protein grains David Sands hopes to develop. PrOatina gluten-free oatmeal puts tasty treats such as monster cookies back on the menu of someone with celiac disease.

"It has low soluble fiber, a low glycemic index, and the highest balanced protein of any grain. Add gluten free and this crop's potential is astounding," Sands says. "Plus it looks and cooks like rice and is a dryland crop." Even better, it tastes very good.

"Common gluten-free flours are starchy tapioca and rice. They can produce dry, undesirable foods," Wright says. "PrOatina is protein dense and far more palatable. It makes gluten-free foods something the whole family wants to eat, not just the person who requires the specialty diet." Creating a nutritionally superior grain is only the first step. It also takes knowledgeable growers to steward the product.

High protein means no skimping on nitrogen, and fields and equipment must stay absolutely pristine. Even a tiny bit of wheat dust slipping in could ruin a celiac sufferer's day.

"Contamination is a serious problem," says

Wright, who cooperated with three other growers to form Montana Gluten Free Processors. "That's why we took control of the whole process. We plant, grow, process, and package PrOatina, Timtana, and Camelina. Our products have less than three to five parts per million gluten. They won't trigger a response."

The work is worth the effort. PrOatina is worth about \$0.25 per pound as compared to \$0.08 for standard oats. "Growing up, I couldn't wait to be done so I could cruise in my souped up '68 Chevelle," he says. "Now I get frustrated that there isn't more daylight. It's exciting to produce a product that can truly help someone."

IR-4 Project State Liaison Meeting By Mary Burrows

Mary Burrows attended the IR-4 Project meeting in Richland, Washington on March 25 and 26, 2014. The IR-4 project facilitates pesticide registrations on minor crops. In Montana, minor crops include hops, grapes, cherries, hemp, camelina, *Brassica carinata*, safflower, bees, dill and mint. The highlight of the trip was, of course, the wine tasting in Yakima valley. Mary got to visit with an old friend, Michelle Moyer, who is the Extension Viticulturist and Enologist at WSU- Irrigated Agriculture Research and Extension Center (IAREC). They talked about various extension methods, effectiveness of 'push' technologies, and industry involvement in extension efforts. They then tasted wine at the newly open 14 Hands tasting room and Yakima Valley Vintners, a community college that has a wine making program



These aren't grain bins. 14 Hands Winery.



The 2010 Voignier, 'Class Project,' was excellent.



A processing line at Sun Heaven Farms (packaged for Costco, Sysco, etc.)



Ray Ratto of Ratto Brothers Farms, Salinas, CA walking through a field of organic blueberries. Those metal pipes are propane heaters that keep the plants from freezing. All plants are drip irrigated.

and academically themed labels. They capped the day with a visit to Chukar Cherries in Prosser.

The actual meeting was of course very educational. Participants learned about the pesticide registration process and how IR-4 operates, capacity building for pesticide regulation in Morocco, molecular markers for insecticide and acaricide resistance, and then went on a tour of Yakima valley agriculture. We visited Sun Heaven farms in the middle of onion packaging. The scale of the operation was too massive to even approach explaining with pictures. We toured the IAREC and had a lovely homemade Mexican meal with station-brewed beer, before touring the hops research facility and mint oil extractors (we missed Rocky Lundy!). We then went on to meet a local grower of hops, apples, and organic blueberries, Keith Oliver. The lesson there was that spotted wing Drosophila is the main threat to production of organic blueberries and with the explosion in production, organic blueberries are about to get very cheap. The tour capped off with a tour of Hogue Ranches by Rick Hamman and the 14 Hands Winery. Mary's most profound realization during the trip was that the proportion of wine she drinks that is produced by Chateau Ste. Michelle is very high (>0.5).

Work, Water, and Wetlands: CELA 2014 By Rebekah VanWieren

In March, Jennifer Britton and I attended our academic conference for the field of Landscape Architecture, CELA (Council of Educators in Landscape Architecture), in Baltimore, MD. The conference was located near the Inner Harbor downtown Baltimore, a tourist destination of shops, museums, and attractions interspersed along a series of historic shipping piers.

This year's conference theme was *Layers: Landscape, City, Community*, although it felt more like the theme was about water, since we experienced lots of rain, went on walks along the Harbor, and toured storm water management related projects. I presented for the first time at this conference, with a talk in collaboration with a colleague from the University of Michigan, entitled "Shine Bright Like a Diamond: teaching strategies for moving beyond the 'scenic'". The work was part of a symposium in the pedagogy and teaching track, and presented a case study of pedagogical frameworks and strategies for helping landscape design students understand the challenges and

opportunities from drawing on paper to actually constructing three-dimensional places that impact people's perception of their environment. I attended some excellent presentations on participatory design, environmental psychology and landscape perception, and studio teaching, and also enjoyed reconnecting with colleagues from other institutions as well as meeting new faculty early in their academic career like me.

Besides conferencing, I had the pleasure of visiting with a friend from graduate school who is a landscape architect at Biohabitats, a unique firm that does conservation planning, ecological restoration, and regenerative design while keeping rigorous science at the core of their work. Visiting their Chesapeake/Delaware Bays Bioregion office space (they actually list their offices by bioregion, instead of by physical political boundaries) was a window into their mission to "restore the earth and inspire ecological stewardship". The office is located in a rehabbed horse stable building that was part of a historic mill complex. Outdoors it is landscaped with only native plants designed by the staff, and inside plants abound, including a green wall. The value that Biohabitats (biohabitats.com) places on their collaborative approach to complex environmental problems is evidenced by the fact that that my friend, an ecological designer and planner, sits and works next to a water resources engineer, fluvial geomorphologist, restoration ecologist, construction manager, arborist and communications specialist.



Floating Wetlands outside the National Aquarium, Baltimore.



Floating Wetlands outside the National Aquarium, Baltimore. (Credit: Biohabitats.com)



Inside the very green Biohabitats office. (Credit: Jennifer Dowdell)

I also toured some of the Healthy Harbor Initiative's projects that are underway in the Inner Harbor meant to improve water quality and ecological literacy, with the big vision that the Harbor be swimmable and fishable by 2020. One of the projects, the Floating Wetlands (Biohabitats was actually the lead on design and construction) are pictured below in the summertime. Few natural wetlands exist along the highly urbanized shoreline, and the 2,000 square foot floating pocket wetlands planted with native plants have provided habitat in

small ways for aquatic life like mussels, crabs, waterfowl, and fish. The floating structure of the wetland “pods” is up-cycled plastic bottles found as trash in the Harbor! (healthyharborinitiative.com)

New Phone App for Grasses By Whitney Tilt

The College of Agriculture at Montana State University and High Country Apps have partnered to produce the new *Montana Grasses* identification app for iOS and Android devices. The app provides images, species descriptions, range maps, and other information for more than 100 grasses and grass-like plants inhabiting the agricultural landscapes in Montana and adjacent states and provinces. Designed for beginners and experts alike, *Montana Grasses* will appeal to anyone who wants to identify grasses and learn more about them. The app does not need an Internet connection to run, so you can use it no matter where your wanderings take you.



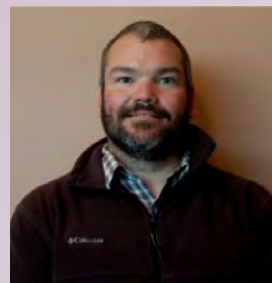
“Grasses are economically and ecologically vital to our state, and are iconic of Montana’s open landscapes” observes Matt Lavin of MSU’s Plant Sciences & Plant Pathology Department. “*Montana Grasses* brings a wealth of information to your mobile device in an easy to use format helpful to landowners, researchers, and the general public.”

Users can browse the species list or search for specific plants by common or scientific name. In addition, the app’s identification feature provides 13 sets of characteristics to help define your search, including: overall appearance, seed head, blade width, auricle, habitat, elevation, and origin (native or introduced). Select the characteristics you know -- a click of a button returns a list of thumbnail images and species that match your search.

Montana Grasses includes a “favorites” feature that allows users to select a custom list of species for future reference and sharing via email and social networks. Lastly, detailed information on grass identification basics, sources and resources, as well as a glossary of botanical terms and diagrams of grass anatomy are provided.

Course Focus

AGSC 491 Plant Nutrition and Soil Fertility Management - Mac Burgess



Crop Science and Environmental Horticulture Science Majors in the Department of Plant Science and Plant Pathology, as well as students in the interdisciplinary Sustainable Food and Bioenergy Systems

Program have a new option for learning about managing plant nutrition and soil fertility in applied settings. In this new course, offered this fall and currently under review for approval as a 300-level course in AGSC, students will pursue the following learning outcomes:

- Know the essential plant nutrients, their functions in plant growth, uptake mechanisms, fertilizer sources, and deficiency/toxicity symptoms.
- Describe how soil and water store, transport, and mediate the cycling and uptake of plant nutrients.
- Calculate application rates for soil amendments, including fertilizer, manure, and compost, to meet plant nutrition needs in field crop, turf grass, home garden, greenhouse, and rangeland settings, based on soil test results and research-based extension publications.
- Estimate the contribution of organic nutrient cycling to plant nutrition under various management systems in different environmental contexts.
- Apply knowledge of plant nutrition to real-world management scenarios in horticultural, agronomic, and rangeland settings.
- Assess the environmental impact of soil fertility management decisions.

The course will be taught in a teaching lab in the Plant Growth Center. We will begin with a thorough review of the chemistry of the essential plant nutrients. We will then prepare modified Hoagland's solutions for use in a greenhouse project where we will intentionally induce nutrient deficiencies in hydroponic barley. We will then practice diagnosis of nutrient deficiency by visual assessment, chlorophyll measurement, and plant tissue analysis. Finally, we will practice soil sampling and extraction procedures and learn how to interpret soil test reports.



Aerial photo showing the interaction of pea and lentil cover crop management and N fertilizer on Nitrogen uptake of Choteau spring wheat near Amsterdam, MT in 2011.

Kammeraad Wins Award



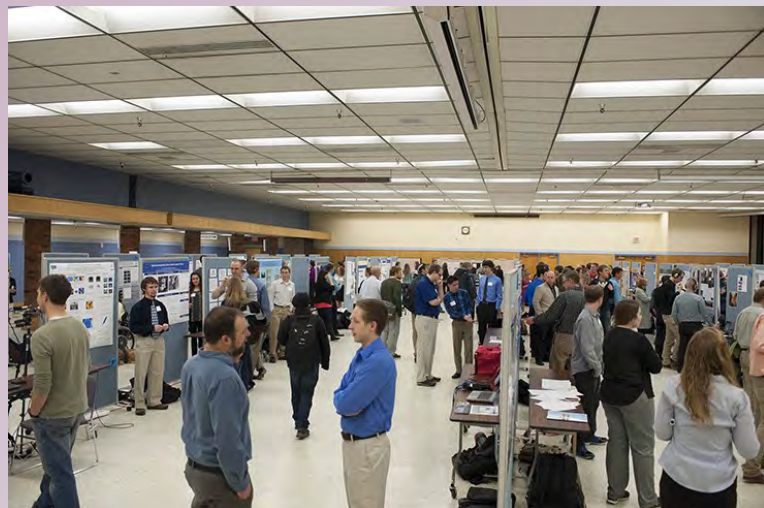
Jacob Kammeraad recently was selected as one of the six finalists for advancement to the next round of the 2014 AACCI Best Student Research Paper Competition. His presentation was entitled "Improving wheat milling

and baking quality via development of novel Puroindoline alleles". The competition will take place on Tuesday, October 7, from 8:30 - 11:00 am (subject to change) during the AACCI Annual Meeting in Providence, Rhode Island, USA. Winners of the competition will be announced at the Closing Session and Farewell Reception on October 8.

Congratulations Jakob!

2014 MSU Student Research Celebration

Students of faculty members Li Huang, Bill Dyer and Bob Sharrock recently displayed their research with a poster at the MSU



The Strand Union Ballrooms bustle with activity during the 20th annual Student Research Celebration Tuesday, April 15, 014. The event featured more than 250 students representing all disciplines of study. MSU photo by Kelly Gorham.

Research Celebration.

The title of Patrick Cole's (Li Huang) poster was "Investigating the role of beta-1,3-1,4-glucanase in the resistance of *Triticum aestivum* to *Puccinia infection*". Tara Donohoe's (Bill Dyer) poster was entitled, "Physiological Analysis of Oxidative Stress Response in Multiple Herbicide Resistant *Avena Fatua* Biotypes". Lastly, the poster of Charles Plummer and Amanda Weber (Bob Sharrock) was entitled, "Structure/Function of the Protein Phytochrome B in *Arabidopsis thaliana*."

The event featured more than 250 students representing all disciplines of study.

DON'T MISS THIS RAFFLE!



You have an opportunity to support The MSU Turf Club by buying a raffle ticket. The prize is a round of golf for you and your friends at the following gold courses: Riverside Country Club, Bridger Creek Gold Course, Cottonwood Hills Golf Club, Valley View Gold Club, and Black Bull Golf Community. *Please see the last page of this newsletter for more details.*

Montana Ag Live! Schedule for May

May 4-Darrin Boss, Superintendent, Northern Ag Research Center, "Cattle Research and Production in Montana"

May 11-Bob Stougaard, Superintendent, Northwestern Ag Research Center, "Orange Wheat Blossom Idge, a new, dynamic insect of wheat in Montana"

May 18-Becky Mattix, Adjunct Asst. Professor, Immunology and Infectious Diseases "New Prevet Program at MSU"

Invited Talks

Gary Strobel was invited to give the opening lecture at the 1st annual Sea Island, Georgia, Conference on Creativity held March 25-26. There were twelve invited speakers who discussed their respective fields of endeavor. Participants included Dr. Ken Kamler who spoke about his expeditions on Everest. Kamler wrote a popular book giving an account of the fateful 90's expedition in which several people died on the mountain. Susan Morrison, the editor of the New Yorker, discussed the magazine and what life is like as the chief editor. Dr Diana Reiss of Hunter College discussed life with dolphins and the latest factoids on how they can communicate. Robert Wilson of Harvard University and winner of the Nobel Prize for physics, presented a discussion on the events and observations leading up to the concept of the big bang theory. Others covered such interesting topics as the science of magic, how chimps feed, and the organization of the rainforest ecosystem. David Kinnerly, former presidential photographer for President Gerald Ford and winner of a Pulitzer Prize for photography, showed an incredible array of outstanding photos from his long career in

this field. Gary Strobel gave accounts of multiple rainforest expeditions and the discoveries of novel endophytes and their useful products.

Michelle Flenniken, is participating in a meeting aimed at "synthesizing transcriptome data to explore interspecies bee-pathogen molecular interactions that may underpin pollinator decline (Trans-Bee)" sponsored by the iDiv German Centre for Integrative Biodiversity Research, in Leipzig, Germany (April 2014).

Publications

Runckel, C., DeRisi, J.L. and Flenniken, M.L. A draft genome of the honey bee trypanosomal parasite *Crithidia mellificae* (2013), *PLoS ONE* 9(4): e95057. weblink: <http://www.plosone.org/article/info%3Adoi%2F10.1371%2Fjournal.pone.0095057>

Grants

M. Burrows, J. Pasche. Fungicide resistance monitoring for Ascochyta blight in Montana and other pulse-growing states. Northern Pulse Growers Association.

M. Burrows. Pulse Crop Diagnostic Laboratory. Farm Bill, APHIS 10201.

Cathy Cripps. Inoculation of Whitebark Pine Seedlings with Native Ectomycorrhizal Fungi. 2014-2015, a continuation of our previous research with additional funding. USDA Forest Service.

T. Dougher, Protocol Development for Production of Montana Native Plants, MJ Murdock Charitable Trust.

K. Wanner, "Elucidating the Molecular Mechanisms of Phermone and Odor, USDA.

Black Walnut Tree is Ceremonial Tree By Toby Day Extension Horticulture

On Thursday, May 8 at 3:00 p.m., there will be a celebration commemorating 100 years of MSU Extension, held on the west side of Taylor Hall. Speeches will be made, tours of Taylor Hall will be available, cake will be eaten, and a ceremonial tree will be planted. The tree selected for the site is a black walnut (*Juglans nigra* L.). Black walnut isn't very common in the area and there is not a black walnut on the MSU campus. It is also a tree that could be used for the Woody Ornamentals class (PSPP 231) in future semesters. It is a stately tree, its wood a



The poster for the Sea Island Creativity Conference features a collage of photos of speakers and attendees. The text on the poster includes:

SEA ISLAND CREATIVITY CONFERENCE

FRIDAY, MARCH 28–SATURDAY, MARCH 29

Expand your horizons and stimulate your mind by engaging with extraordinary thinkers and innovators.

For lecture schedule see *This Week at Sea Island*.

Complimentary. Reservations required for each day, ext. 5111.

SATURDAY, MARCH 29, 6:30 p.m.

An intimate dinner with Creativity Conference speakers in The Cloister Clubroom

\$85/person. Cash bar. Reservations required, ext 5111.

Sea Island



Black walnut tree (Photo: Judy Sedbrook)



Leaves of a black walnut
(<http://www.extension.iastate.edu>)

valuable hardwood, adapted to our soil and climate, and overall a really fine shade tree. However, if you "Google" black walnut, mostly what you read about is that it is "toxic". While it can be allelopathic, the

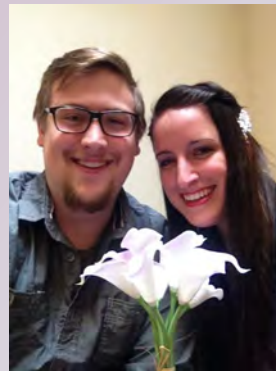
tree was chosen for the site because of the lack of landscape sensitive plants in the area. The only greenery around the tree would be turfgrass which is reasonably resistant.

So, what makes black walnut so "toxic?" It is best described by Micheal Dana and Rosie Lerner from Purdue University in their Bulletin *Black Walnut Toxicity*. Following is a quote from their bulletin. "The causal agent is a chemical called "juglone" (5 hydroxy-1, 4-napthoquinone), which occurs naturally in all parts of the black walnut. Juglone has experimentally been shown to be a respiration inhibitor which deprives sensitive plants of needed energy for metabolic activity. The largest concentrations of juglone and hydrojuglone (converted to juglone by sensitive plants) occur in the walnut's buds, nut hulls, and roots. However, leaves and stems do contain a smaller quantity. Juglone is only poorly soluble in water and thus does not move very far in the soil."

Given the positive attributes of this tree along with the location, this tree will be a welcome addition the urban forest on the campus of Montana State University. Even though there are plants that are sensitive to black walnut, there are many others that are observed to be tolerant. Some of those include: arborvitae, cedar, clematis, crabapple, elm, forsythia, hawthorn, honeysuckle, juniper, black locust, and most maples other than silver maple, oak, rose, viburnum and Virginia creeper.

Carmen Pol Weds Ryan Murphy

Carmen Pol married Ryan Murphy (Murph) on April 19, 2014. They will have a large wedding ceremony next year in Thailand on April 9. Congratulations Murph and Carmen!



May Birthdays

Mina Talajoor	6
Heather Rimel	12
Jakob Kammeraad	12
Matt Moffet	14
Chaofu Li	16
Riyadh Khafaji	17
David May	20
Mareike Johnston	22
Kim Prosek	22
Faye Jorgensen	23
Tom Blake	24
Gene Ford	29
Bob Johnston	29
Deanna Nash	31



Recipe of the Month

Fluffy and Healthy Cottage Cheese Pancakes

- 1 c low-fat cottage cheese
- 1 c plain yogurt
- 3 eggs
- 1/4 t baking soda
- 1 dash salt
- 1 c all-purpose flour or any combination of whole wheat and white flour
- 1 T sugar
- 1 handful of blueberries or some other fruit



Preheat griddle or large skillet over medium low heat while you make the batter. Beat

together the cottage cheese, yogurt and egg yolks. Combine the dry ingredients. Beat the egg whites until stiff but not dry. Stir the flour mixture into the cottage cheese mixture, blending well but not beating. Gently fold in the beaten egg whites; they should remain somewhat distinct in the batter.

Spray the griddle or skillet with neutral non-fat cooking spray (or a small amount of butter) and, when it is hot, add the batter by heaping tablespoon, making sure to include some of the egg whites in each spoonful. Cook until lightly browned on the bottom (3-5 minutes) then turn and cook until the second side is brown. Serve immediately.

2014 GALLATIN VALLEY



GOLF TOUR



RAFFLE TO SUPPORT THE MSU TURF CLUB

**Win a round of golf for yourself and friends
at ALL of the following local courses:**



RIVERSIDE COUNTRY CLUB
ROUND FOR 4, CART INCLUDED



BRIDGER CREEK GOLF COURSE
ROUND FOR 2, CART INCLUDED



**COTTONWOOD HILLS
GOLF CLUB**
ROUND FOR 2



VALLEY VIEW GOLF CLUB
ROUND FOR 4, CART INCLUDED



**BLACK BULL GOLF
COMMUNITY**
ROUND FOR 4, CART INCLUDED

TICKETS ARE \$10 EACH OR 3 FOR \$20
THE RAFFLE WILL BE HELD ON MEMORIAL DAY,
MAY 26TH. FOR MORE INFO OR TO
PURCHASE TICKETS CALL 406-599-2189

*WINNERS ARE REQUIRED TO ABIDE BY THE RULES SET
FORTH BY EACH COURSE AND BLACK OUT DATES OR TIMES
MAY APPLY.

