

Plant Science Says



Happy St. Patrick's Day!

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Candidates for Assistant Professor of Plant Genetics Position

Four candidates will be interviewing for the position of Assistant Professor of Plant Genetics. This is a tenure track position, 65% research and 35% teaching. They will be interviewing on the following dates in March:

Michelle Flenniken - 18-19

John Lovell - 20 - 21

Marc Brock - 25-26

Ryan Thum - 27-28

Detailed schedules and CVs will be sent out in the near future.

Hoch and Bartels Honored at 32nd Annual Awards for Excellence

The MSU Alumni Association and the Bozeman Area Chamber of Commerce hosted the thirty-first annual Awards for Excellence Banquet on Tuesday, February 18. Forty of Montana State University's top seniors and their faculty mentors were recognized. The seniors were required to have at least a 3.5 grade point average on a 4.0 scale, as well as demonstrated campus leadership and community service.



Bill Hoch and Justin Bartels at the Awards for Excellence Banquet.

Justin Bartels, an environmental horticulture and economics major, was one of the Excellence Award winners and he chose Bill Hoch as his mentor.

Bill Hoch states, "Justin Bartels has been an outstanding student and member of the community. He tackles everything with a positive mindset and rigorous determination, always with the greater good in mind. Justin has truly spread his wings while at MSU; obtaining his Wilderness Emergency Medical Technician certification, tutoring MSU students, participating in Toastmasters, interning with Downtown Bozeman, serving as an Americorp Crew Leader and volunteering as a Service Coordinator for the Sierra Mono Museum are just a sample of what Justin has done, all while maintaining a 3.95 GPA double-majoring in Environmental Horticulture Science and Economics. I am thrilled that he has been recognized with this honor."

Congratulations to Justin and Bill!

26th Annual Bug Buffet By Florence Dunkel

Two hundred and eleven people signed the guest registry at the Buffet, Friday, 21 February 2014, almost a 150% increase in attendance over last year which had been the most well attended to date. The students in the following classes collaborated with MSU catering to host this free event: B100 162 CS Issues of Insects and Human Society and the honors section of H-AGSC 465R Health, Poverty, Agriculture: Concepts and Action Research

More interesting than the sheer number of attendees were the ages of the attendees. There were about 25 little ones under the age of five. Some were rather picky. One young fellow simply took the top of his slice of quesadilla off and carefully picked off all the *Galleria* and popped them in his mouth. *Galleria mellonella* is a species of "land



Children under 5 loving the Bug Fest. Photo Courtesy of Matthew Kennedy.



Melissa Svee, a Liberal Studies student in AGSC 465R preparing a stir fry with *Achetas* (house crickets). Photo courtesy of Matthew Kennedy.

shrimp", (some call them insects) that is a pest in bee hives. Land shrimp are close cousins of the "other shrimp," that live in the oceans.

Faculty and students from China (including Inner Mongolia), Nepal, El Salvador and Thailand, generated interesting informal conversations about some of the 1900 species worldwide traditionally consumed by humans. Mulberry silk moth pupae (a by-product of the silk-making process), grasshoppers, and bee brood were the main

delicacies discussed. The seven dishes and desserts at the Bug Buffet featured the standard US food insects: larvae of *Tenebrio molitor* (darkling beetle); larvae of *Galleria melonella* (wax moth); and *Acheta domesticus* (house cricket). The menu included: Land shrimp (*Galleria*) cocktail; *Tenebrio* corn bread; *Acheta* fruit bars; *Tenebrio* dream bars; and chocolate coconut chirpy bars. *Acheta* stirfry, and *Galleria* quesadilla were made on the spot by students from BIOC 162 CS (Dylan Watts), and AGSC 465R (Jacqui Lebel), supervised by MSU Catering. The favorite of many was the quesadilla (recipe at end of article).

Guests were greeted in the Plant Growth Center atrium at the Pollination Table. As usual, Dave Baumbauer, a Bozeman bee-keeper as well as the Manager of the Plant Growth Center, delighted young and old with his stories of hive life, particularly the roles of the girl-bees and the boy-bees. Seventeen honeys were sampled by guests. The honeys came from throughout the US, Canada, and



A few of the attendees at the Bug Fest enjoying the many entrees. Photo courtesy of Matthew Kennedy.

even wild honey from shea flowers in Mali. Insect spit (commonly known as silk) decorated the walls of the mezzanine and Room 214 where the cooking took place. In the hallway between the mezzanine and room 214, students presented posters describing their research.

Land shrimp are complete proteins, in contrast to most grains that are often missing or low in one of the essential amino acids. Land shrimp protein is per gram equivalent to beef, but contains significantly more iron, calcium, and other nutrients than the equivalent of beef. In material resource-poor countries where beef is not available, most kids prefer insect snacks to supplement their grain-based diet low in some essential amino acids. When modern technology or Western attitudes remove this important source of complete proteins, kwashiorkor (mental and physical stunting) results.

Jacqui Lebel, a Sustainable Foods major, presented research from previous AGSC 465R students' that she is following up on. She is helping to solve some technical questions with cricket farming in Malian villages where kwashiorkor or micronutrient deficiency affects 23-40% of young children.

Sebastian Stokhof De Jong from LRES presented a poster summarizing current entrepreneurial activity with insect protein in the U.S. In materially wealthy countries, insects will become the protein of choice. One hectare of US ranch land supports 100 kg of finished beef, but can support 908 kg of edible insects. Scarcity of land and water compounded with high levels (20% of total) of greenhouse gases produced by livestock will make insects a viable alternative protein the future.

Have a taste of the sustainable future. Bug
appétit!

Recipe for Galleria Quesidilla

Obtain *Galleria* (wax moth larvae) from your kitchen kit or commercial supplier. Store in container with air holes in refrigerator. Remove packing material and drop into boiling water seasoned with sea salt, if desired. Boil for 20 min.

Brown soft taco in pan with butter. Turn and spread with shredded sharp cheddar cheese, diced green pepper. Sprinkle *Galleria* over entire taco. Dot with salsa. Add a few cilantro leaves if desired. Cover with second taco. Turn entire construction upside down in pan. Sautee on low heat about 10 minutes until cheese melts.

Place on cutting board. Cut into small wedges. Serve with a dollop of salsa and sprig of cilantro on top. Enjoy!

Turf Club Attends Conference By Hannah Estabrooks

The Turf Club recently attended the Golf Industry Show and Educational Conference put on by the Golf Course Superintendent Association of America (GCSAA) in Orlando, Florida. This was a big accomplishment for the club as it is their first active year and attending the Show took a great deal of work and fundraising (50/50 raffle and selling Christmas wreaths) in order to make attendance possible. Members who were able to attend included Josh Brewer, Andrew Leiter, Rob Partain, and Hannah Estabrooks. Other club members who were not able to attend but are involved in club efforts are Easton Volz and Khaled Shamesaldain.



*Josh Brewer, Rob Partain, Andrew Leiter
and Hannah Estabrooks*

The conference offered a one of a kind experience where club members were able to attend classes specific to the turf industry, including topics such as irrigation design, meteorology: How it can help to manage your turf, how to present yourself through social media, tips and tricks for interviewing successfully and creating a professional resume, new and upcoming computer programs and apps to organize your course management, and how to use colorants in your program. The show also provided the opportunity to network with industry professionals and potential employers, explore the wide variety of new innovations and industry standards on the show room floor, as well as having a professional portrait taken.

The Turf Club is hopeful to send a group to next year's annual conference in San Antonio, and is already working to start their next fundraising event. The club also plans on participating in "First Green, Links as Labs" over the summer, a national program that educates youth about the science of turf management through hands on learning.



Josh Brewer, Rob Partain, Andrew Leiter and Hannah Estabrooks on their way to the golf show.



Course Focus BIOM 435/MB530 - Virology

By Mark Young

We have all heard of them, but what do we really know about viruses? BIOM435/MB530 is an introductory course

into the world of viruses taught each Fall semester. BIOM435 is divided into two parts. The first half of the course is focused on the fundamentals of the viral replication cycle. The second half of the course examines selected examples of viruses impacting human health (e.g. HIV, Influenza, Polio, Dengue), plant disease, (e.g. BYD, WSMV) and as fundamental tools for understanding cell biology (lambda). As part of this course, we travel the world with students leading live discussions via video links with virus experts from around the world including doctors on the ground in HIV clinics in Zimbabwe to virologists working on Dengue vaccine development at the Pasture Institute in Paris. MB530 is an additional component of BIOM435 course open to graduate students interested in a more in-depth understanding of virology. This course uses the primary literature to explore topics in virology from virus structure and replication to vaccine development. BIOM435 class space is limited to 65 and typically has a waiting list. So sign up early if you are interested. I hope to see you this Fall!

Montana Ag Live March Schedule

March 23 Michelle Flenniken, Research Assistant Professor, "Montana's bees and their importance to agriculture"

March 30 Mike Ivie, Entomologist, "The effect of the newly discovered Emerald Ash Borer on Montana's ash trees"

New Employees Cheryl McNicholas



My name is Cheryl McNicholas. I was recently hired as an Accounting Associate for PSPP. A native of rural Nebraska, I have also called Colorado, Oregon, Idaho, Wyoming and Montana home. My husband, Tim, and I recently moved back to the

Gallatin Valley after being away for four years. My hobbies include skiing, hiking, biking, golf and music.

I am a graduate of the University of Nebraska, where I majored in Parks & Recreation Management. I've worked in bookkeeping for several years and am pleased to be back at MSU and part of the PSPP Department.

Invited Talks

Cheryl Moore-Gough has been invited to be the keynote speaker for the Pennington County Master Gardener's annual "Spring Fever" conference on March 1, and for the Powell, Wyoming Extension's small acreage "Common Sense Conservation" conference on March 29. Cheryl will be speaking on growing vegetables in difficult northern gardening conditions, seed saving for beginners and advanced savers, growing small fruits, and choosing appropriate urban trees.

Gary Strobel has been invited to speak at the Japan Society for the Promotion of Science (JSPS) US Alumni Association, 4th Multidisciplinary Science Forum, Old Ambassador's Residence, Embassy of Japan Washington D.C. on February 21, 2014.

Mathre Wins Award

Don Mathre, retired Department Head of the Plant Pathology Department, recently won a Life Time Award for his help doing the score table for MSU basketball games for thirty plus years and 1000 plus games and almost no mistakes. Don states, "I really enjoyed working with the MSU Athletic Department over the past 30 plus years. The people were great, even the refs were fun to interact with, so it was just a fun thing to do. Our former winter wheat breeder, Alan Taylor, was the one who first recruited me to work on the basketball scoring crew."



Don Mathre receiving Lifetime Award from Champ and Peter Fields

Straw Bale Gardening

By Toby Day

Extension Horticulture

I like to grow summer and winter squash in my garden using a technique called straw bale gardening. Advantages to using straw bales include accessibility (the gardens are as tall as the straw bale), low cost, they can heat up due to composting (Cucurbits love hot soil temperatures), and the release of nutrients as they compost. Another advantage is the left over straw at the end of the season can be used for an amendment, as a carbon source in a new compost pile, or as mulch.

You want to start with small straw bales, which usually cost between \$2 and \$3 per bale and can be locally sourced. Be sure to use straw bales and not hay bales, as hay bales will have a lot of weed seed. Straw bales may have left over wheat or barley seed, but when they germinate, the sprouted plants are usually easy to remove. Try to make sure that the bales are tightly knit and they are still tied together well. Old straw bales work, but be sure that they are still held together tightly.

Several weeks before planting into the bales, you will want to condition them. Before conditioning, be sure that the bales are set where you want them. During the conditioning process, the bales will get very heavy with water and almost impossible to move. First, you want to water the bales for several days to be sure that the inside of the bale is moist. I like to add water slowly to the bales by having several milk jugs on hand with small holes poked in the bottom. This way water slowly infiltrates to the middle of the bale. If you dump water on the bale, they can act like a thatch roof, keeping water from getting into the middle of the bale. Slow water is key.



A new take on the raised bed using straw bale gardening.

Once the whole bale is moist (usually 3-5 days of watering), add about 1 cup of ammonium sulfate or other high nitrogen fertilizers of similar formulation to the bale for the next 3 days. I like to sprinkle the bale with some topsoil to "inoculate" the bales with microbes. The bale, with the addition of water, nitrogen and the microbes will start composting. After three days continue fertilizing with half the amount (1/2 cup 21-0-0) for another 3 more days. Water the fertilizer into the bale each day just enough to keep the bale moist, but not so that water is running out the bottom.

At this point you will want to stop fertilizing. Feel the bale, it should be hot (over 100°F!) due to the composting process. Maybe even too hot! Continue watering but wait to plant until the bale temperature reaches under 100°F to plant. This may take several days. Be aware that it might be 3-4 weeks from the time you started the initial watering to when you can plant (which is why it is in the March newsletter!).

From this point you can plant directly into the bale or you can create pockets or holes to put soil or potting mix into and plant into the pockets. Again, I would plant warm-season vegetables such as squash, pumpkins, zucchini, peppers or tomatoes this way – mostly because the warmer soil (or straw!) is desirable for the warm-season vegetables. One year, using this method, I harvested over 320 lbs. of winter squash using just nine straw bales!

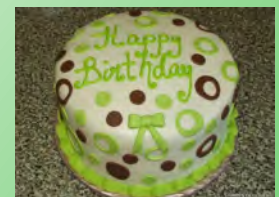
For more information, Washington State University has a good fact sheet on straw bale gardening at <http://cru.cahe.wsu.edu/CEPublications/FS109E/FS109E.pdf>



A typical straw bale garden

March Birthdays

Andrea Varella	11
Erin Gunnink	24
Hilary Parkinson	28
Vicki Blake	28
Elaine Nichols	31



Recipe of the Month

Colcannon

2 1/2 lbs potatoes, peeled and cubed
4 slices bacon
1/2 of a small head of cabbage, chopped
1 large onion, chopped
1/2 c milk
Salt and pepper to taste
1/4 c butter, melted



Place potatoes in a saucepan with enough water to cover. Bring to a boil, and cook for 15 to 20 minutes, until tender.

Place bacon in a large, deep skillet. Cook over medium high heat until evenly brown. Drain, reserving drippings, crumble and set aside. In the reserved drippings, sauté the cabbage and onion until soft and translucent. Putting a lid on the pan helps the vegetables cook faster.

Drain the cooked potatoes, mash with milk and season with salt and pepper. Fold in the bacon, cabbage and onions, then transfer the mixture to a large serving bowl. Make a well in the center, and pour in the melted butter. Serve immediately.