PSPP - Plant Science Says *December, 2017*

Giroux Appointed as Interim Department Head

Charles Boyer, Dean of the College of Agriculture, has appointed Professor Mike Giroux as Interim Department Head of our Department for the next two years. Mike joined PSPP as an Assistant Professor on July 1, 1997. His research is primarily focused on wheat quality and genetic studies involving genes that impact either agronomic traits or product quality. In addition, he teaches Plant Breeding and Genetics and Plant Biotechnology.

Mike states, "I am honored to be able to serve as Interim Head and work with the faculty, staff, and students of PSPP."

PSPP Christmas Party - December 12

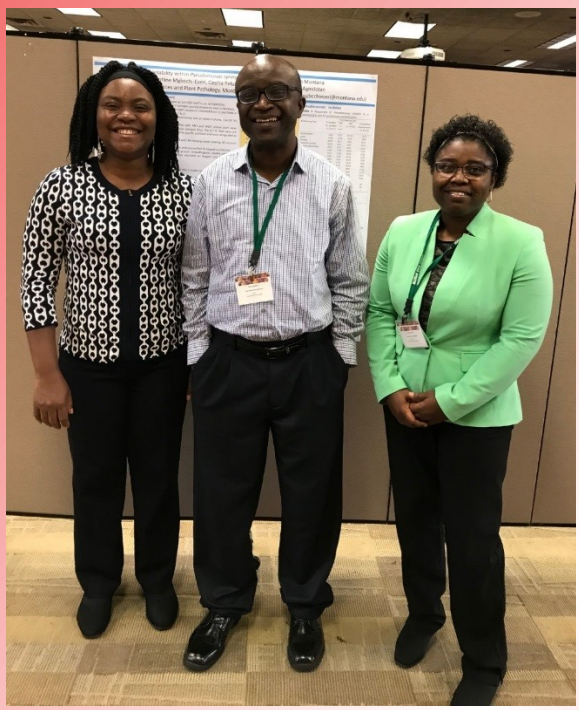
This year, our Christmas party/ potluck will be held in 108 PBB from 11-1. The meat and rolls will be provided; please bring a generous salad or dessert to share. This party would not be complete without Bingo so we will be playing that also. If you want to contribute one of the prizes, please let me know.

NAPIA Conference
By Bright Agindotan and Carmen Murphy

The North American Pulse Improvement Association (NAPIA) biennial meeting was held from November 2-3 in East Lansing, at the Michigan State University campus ("East MSU" as we were affectionately calling it). Montana State was well represented with Dr. Mary Burrows, Dr. Bright Agindotan, Dr. Kevin McPhee, Dr. Josephine Mgbechi-Ezeri, Dr. Cecilia Peluola, and Carmen Murphy in attendance.

On the Wednesday prior to NAPIA, we had the opportunity to attend the 7th International Legume Root Diseases Workshop where we heard from American, Canadian, French, and Brazilian researchers working on root diseases of peas, dry bean, soybean, and lentil. It was a wonderful opportunity to discover what researchers working on similar pulse crops were doing in their respective countries to mitigate root diseases. The keynote talks for the workshop focused on *Aphanomyces euteiches*, as this is a common problem in pea growing regions. The afternoon session had round table discussions to share research ideas, protocols, and methodology between countries and states. One session focused on the pathogen side of the disease triangle; the other session focused on the plant side of the disease triangle and breeding for resistance to root pathogens.

Carmen Murphy (3rd from left) after receiving an award for her poster entitled "Detection of *Aphanomyces euteiches* in Montana".



Josephine, Bright, and Cecilia at the poster session.

After a long day of absorbing information and collaborating, we headed to the Red Cedar function room to unwind and chat.

Thursday morning was the start of NAPIA and the topics ranged from crop rotation with pulse crops, intercropping, using pulse landraces as breeding materials, the nutritional value of pulses, gene editing, evaluating lines for disease susceptibility, and resistance sources for various pulse diseases. After the morning talks, it was time for lunch and member awards. Dr. Todd Schulz and Dr. Rebecca McGee were recognized for their dedication and service to NAPIA over the years. That evening was a mixer with author presentations of posters. Dr. Mgbechi-Ezeri presented her research poster "Variability within *Pseudomonas syringae* pathovars infecting pea in Montana". Carmen Murphy presented her graduate student poster "Detection of *Aphanomyces euteiches* in Montana".

On Friday, we had oral presentations in the morning and topics ranged from plant disease resistance, pulse breeding, blends for pulse yield increase, the use of seed treatment fungicides, pathogen resistance to fungicides, and insect pests. MSU alum Dr. Jamin Smitchger gave a talk entitled "QTL associated with yield, seed yield per plant, and seed size in dry field peas". It was great to catch up and hear how his post-doc position at Washington State was going. Dr. Peluola gave her talk "Assessment of the efficacy of four seed treatment fungicides on *Didymella lentis* of lentil". Dr. Agindotan followed Cecilia with his presentation "Regional pulse crop diagnostic lab: progress and challenges". We had lunch together and the graduate student awards were presented. Carmen Murphy was awarded 3rd place in the graduate student poster presentation competition.

That afternoon the Pulse Lab group visited the Michigan State University Museum, East

Ceramic cornware displayed at the Michigan State University Museum, East Lansing.

Lansing, and were thrilled by the art works from different countries, including the Republic of Benin. Ceramic cornware was one of the pieces of artwork that attracted the group's attention.

This meeting was very worthwhile and we are already keenly anticipating the next gathering in 2019 in Fargo, North Dakota.

Team Barley at the Montana Brewer's Association Conference
By Hannah Turner

Jamie Sherman and I recently traveled to Missoula to present at the annual Montana Brewer's Association meeting. This conference is a great opportunity for Montana brewers and others connected to the industry, such as farmers and maltsters, to network and grow their knowledge about new techniques, products, and research. Jamie's first talk was an open panel discussion which had her alongside a Montana farmer, Erik Somerfeld, and the new Maltster for Montana Craft Malt, Jeff Parks. Erik had a great history of barley varieties and growing them in Montana while Jeff shared a bit about plans for the new 10,000 ton malt facility in Butte. Jamie brought these two topics together with the research we are doing to bring new varieties to the state, which was a great transition to our big presentation of the conference – malt sensory.

Beer flavor is controlled by several factors, primarily its main ingredients: malt from barley, yeast, and hops. Recently, the industry has become interested in the contribution of the barley variety to flavor. A goal of our current USDA-NIFA grant, called the Rocky Mountain Malt Consortium, is to classify the flavor of 200 historical barley lines collected from all over the world to determine if there are unique qualities. The project consists of two parts: 1) assemble a group of panelists (stakeholders) to evaluate the sensory/flavor profiles of each variety and 2) pair the flavor profile with a chemical profile built by our collaborators at Colorado State - who will run metabolomics/proteomics on the lines. This may allow for easier selection and control in breeding new varieties for the state based on what the stakeholders prefer.

Our presentation to the Montana Brewers Association was a pilot run of our flavor profiling for the USDA-NIFA grant. To make beer, barley is converted into malt and the malt is ground. The malt is then soaked in hot water to extract the fermentable sugars, creating a solution called the wort. This solution provides the basis of the brewing process and in our case is the solution analyzed for malt quality and flavor. Malt sensory is performed on the wort in a similar way to which judges would evaluate a beer in competition.

Brewers and maltsters from around the state perform sensory evaluation of the five malted barley varieties we brought for our presentation.

We selected five barley varieties and malted and lightly kilned them under the same conditions to highlight differences in the barley variety. About 30 brewers and maltsters from around the state participated in our session and all agreed that they could perceive differences ranging from

Wort of ~30 varieties produced via the Hot Steep method. Beside each sample is the base malt it was made from.

flavor, aroma and color to mouthfeel. The best part about the presentation was how excited the group was about this project and the enthusiasm we received from several to continue participating as sensory panelists for the full project once we have it ready!

Support for the students came in part from the MSU Undergraduate Scholars Program for research and for travel.

Blue bear larger than life statue looking for cutworm moths and honey reserves at the Denver Convention Center.

Entomological Society of America Meeting
By Florence Dunkel

From November 5-8, 2017, more North American entomologists gathered in one place than ever before. Over 3,400 entomologists gathered behind the giant blue bear of the Denver Convention Center. Seven MSU professors gathered there with their students. Florence Dunkel's team included four undergraduates in Environmental Studies (Emma Kashian), Ecology (Michael Thienes), Economics (James Rolin), and Nutrition Sciences (Kathlene Rolins). Together they presented six posters in the medical entomology section and the ecology section all based on incorporating culture's role in the food insect sciences and in insect vectored human disease. In addition, the CEO and marketing manager of Cowboy Cricket Farms, Belgrade, Montana, had a booth in the exhibit hall. Yes, they did sell out of their cricket powder midway into the conference. Dunkel joined with one of the main student contributors to her book, MSU graduate from the Honors College and Earth Sciences, Greta Robison, to hold a book signing and book chat in the ESA booth for their new book, *Incorporating Cultures' Role in the Food and Agricultural Sciences*. The culinary highlight of the conference for this team was the insect feast at El Five restaurant hosted by CEO of the Rocky Mountain Micro Ranch (insects) and David George Gordon, nationally-known insect chef.

Book signing with coauthor Greta Robinson, B.S. in Earth Science, 2015.

Cowboy Cricket Farms' team present first edible insect booth at national ESA meetings.

Publications

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Why Holly?
By Toby Day, Horticulture Extension Specialist

Ah, it's Christmas time again. Chestnuts are roasting on an open fire (although, I doubt anyone still does this). Garlands and ornaments are hung from the tree, and presents are neatly wrapped below. Eggnog is drunk, Charles Dickens is read, and we can't help but sing "*deck the halls with boughs of holly*, Fa, la, la, la, la, la, la, la, la!

I often ponder the reason why we have such traditions. Take decking the halls with boughs of holly for instance. Why do we use holly? And why must it deck our halls? Other than the Christmas tree and mistletoe, holly is the most common plant signifying Christmas. It is decorated not just in the hallway, it is decorated *everywhere*.

I had to find out why.

Holly is in the genus *Ilex,* a genus of 400-600 trees, shrubs and vines with simple glossy leaves that range from deciduous to evergreen, and often have red, brown or black drupes as fruit. European Holly *(Ilex aquifolium*) is the most widely used as Christmas decoration. It has the characteristic spiny glossy leaves with red fruit, although

American holly (*Ilex opaca*), grown in the Eastern U.S. is a good replacement.

According to the website *howstuffworks*; before Christianity, the Druids "regarded holly as a symbol of fertility and eternal life, thought to have magical powers." Druids believed holly to have these powers because their leaves and berries withstood winter months with hardly a wither. Druids brought holly into their homes for luck, protection (even from lightning strikes), to ensure the regrowth of vegetation after winter, and to ward off evil spirits. While all this lore may not be entirely historically accurate, I can see the tradition of hanging holly in homes likely had Druid beginnings, as most Christmas traditions were adaptations of pagan rituals.

After the birth of Christ, the Romans celebrated Saturnalia, a festival near the winter solstice (thought to be December 17) honoring Saturn, the Roman god of seed and sowing. Holly was a sacred plant that was used to honor the god. Holly wreaths were often carried around, given as gifts, and used for decoration.

In recent Christianity, holly is more related with the death of Christ than his birth (which is odd, since Christmas celebrates Christ's birth). "Today, Christians consider holly symbolic of Jesus Christ in two ways. The red berries represent the blood that Jesus shed on the cross on the day he was crucified. Legend states that holly berries were originally white, but that the blood Christ shed for the sins of humankind stained the berries forever red. A holly's pointed leaves symbolize the crown of thorns placed on Jesus' head before he died on the cross." – According to Sam Abramson's article *Why do we decorate with holly at Christmas?*

In any case, the tradition has stuck, and we decorate with holly still today (although most is plastic and is rarely decking halls). We also will continue to sing the verse "D*eck the hall with boughs of holly*, Fa, la, la, la, la, la, la, la, la!" trolling the ancient Yuletide carol.

Recipe of the Month

Bacon, Cheddar, and Swiss Cheese Ball

Courtesy of Taste of Home

1 package (8 ounces) cream cheese, softened
1/2 cup sour cream
2 cups shredded Swiss cheese
2 cups shredded sharp cheddar cheese
1 cup crumbled cooked bacon (about 12 strips), divided
1/2 cup chopped pecans, toasted, divided (see below)
1/2 cup finely chopped onion
1 jar (2 ounces) diced pimientos, drained
2 tablespoons sweet pickle relish
1/4 teaspoon salt
1/4 teaspoon pepper
1/4 cup minced fresh parsley
1 tablespoon poppy seeds
Assorted crackers

In a large bowl, beat cream cheese and sour cream until smooth. Stir in shredded cheeses, 1/2 cup bacon, 1/4 cup pecans, onion, pimientos, pickle relish, salt and pepper. Refrigerate, covered, at least 1 hour.

In a small bowl, mix parsley, poppy seeds and remaining bacon and pecans. Spread half of parsley mixture on a large piece of plastic. Shape half of the cheese mixture into a ball; roll in parsley mixture to coat evenly. Wrap in plastic. Repeat. Refrigerate at least 1 hour. Serve with crackers. **Yield:** 4 cups.

To toast nuts, bake in a shallow pan in a 350° oven for 5-10 minutes or cook in a skillet over low heat until lightly browned, stirring occasionally.

December Birthdays

Noelle Orloff	4
Nancy Blake	6
Doug Holen	10
Cheryl Moore Gough	23

Sue Brumfield	26
Timothy Seipel	28

Uta Stuhr, Emma Jobson, Mary Burrows, Blake Wiedenheft, Monica Brelsford, Tracy Dougher and Michelle Flenniken after running in Huffing for Stuffing!

Hannah Estabrooks and Garrett Turner were married on October 7 at Soldiers Chapel, Big Sky, Montana. Congratulations to both of you!

As always, we have enjoyed working for all of you this year and we wish each of you a very Merry Christmas and a Happy New Year!
Irene, Jill, Karen, and Autumn