



*PSPP - Plant Science Says*

*December 2018*

### **PSPP Christmas Party - December 7**



The Christmas party/potluck will be held in 108 PBB at 11:30 a.m. 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.

### **MSU Extraordinary Women Courtesy of MSU News Service**



They touch every area of the university, ranging from Montana State University's first female mathematics teacher to one of the country's first Extension poultry experts to MSU's first female president. And now the public can know more about the

stories of the Extraordinary Ordinary women who have molded the history of MSU with an exhibit at the MSU Library and an expansive website.

The 125 "Extraordinary Ordinary Women" who impacted the university were selected this

summer by the MSU President's Commission on the Status of University Women from the 400 nominations submitted by the public as part of the university's yearlong quasiquicentennial celebration.

MSU President Waded Cruzado said, "The list shines a light of recognition and appreciation on women who have been leaders, problem solvers and innovators throughout the university's history, whether they were widely recognized or were relatively unknown during their time on campus".

Congratulations to one of our faculty, Florence Dunkel, on being chosen as one of the 125 Extraordinary Ordinary Women! Following is her profile.

"Florence Dunkel has made remarkable contributions to the status of women at Montana State University as well as nationally and internationally. Joining MSU as an entomology professor in 1988, she became the College of Agriculture's first female department head and the second woman to chair an entomology department at any U.S. land-grant university. She has inspired countless women students to pursue careers in the life sciences. Dunkel's innovative, experiential teaching methods have garnered many awards, including the President's Excellence in Teaching Award



(2013) and the Entomological Society of America's Distinguished Achievement Award in Teaching (2012). Her courses are multicultural in perspective and strongly emphasize engagement. For example, her fifth and most recent academic book (Elsevier 2017) documents how she engaged students in service-learning on the Northern Cheyenne and Apsaalooke reservations as well as in "Peace Corps-type" projects in Africa. One of these projects is credited with virtually eliminating malaria in a village in Mali. Dunkel was the first woman to lead a USDA scientific team to mainland China. Her research on the biocontrol of insects and biorational natural products resulted in safe alternatives to chemical pesticides, for which she has been awarded two patents, each sub-licensed to biotech firms."

### Greg Chorak Wins Award

The cooperative Ecosystems Studies Unit (CESU) is a national network of government, nonprofit, and university partners. The CESU links partners in the network to accomplish research and technical tasks for the benefit of management. The project that Greg worked on was a partnership between



Graduate Student Greg Chorak receiving the 2018 Student Award from the Rocky Mountain-Cooperative Ecosystems Studies Unit at Colorado State University in Fort Collins, CO.

Montana State University, U.S. Army Corps of Engineers, and U.S. Geological Survey. Greg was invited to their annual meeting, hosted this year by Colorado State University, to give a talk on his research and receive an award for being an outstanding student contributor to the project he was a part of.

Congratulations Greg!

### Montana Pulse Day By Monica Brelsford

The Northern Pulse Growers Association put on the annual Montana Pulse Day in Billings November 11-12. This event focused on educating growers about the trade turmoil, domestic markets, farm bill updates, and best management practices for growing Montana pulse crops. There were three panel discussions on Monday. The Producer Panel focused on farming techniques and practices and was quite lively. Farmers discussed seeding rates, inoculum rates, and failures and lessons learned. For the USA Dry pea and Lentil Council panel section much discussion was on the current trade issues in agriculture and subsequent product prices. During the positive presentation given by Becky Garrison, she indicated that U.S. markets for pulse crops are taking off! Pulse crops are being recognized as an inexpensive, quality, high protein food that is making its way into institutional food systems for K-12 schools and colleges. The national campaign "Half a cup Habit" has more than 79,000 sign-ups, <https://pulses.org/nap/half-cup-habit/>. The importance of including pulses in our diets has been featured in *Good Housekeeping*, *MSN Lifestyle*, *Prevention*, *Runner's World*, and *Women's Health* to name a few, with media coverage of over 2 Billion views. A panel discussion rounded out the day; the panel was made up of researchers Frankie Crutcher, plant pathologist at Eastern Ag Research Center, Kevin McPhee, pulse breeder, and Ed Davis, weed specialist from MSU-Bozeman. The discussion revolved around crop rotation to reduce disease and weed pressure. Persistent weeds and soil pathogens are a major concern for pulse growers, and proper rotations can enhance chemical product efficacy and



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The Half-Cup Habit makes it simple to add the recommended 1 1/2 cups of pulses per week\* (or 1/2 cup three times per week) to your diet. Packed with protein, fiber and nutrients, eating pulses can help you maintain a healthy weight and improve overall wellbeing.

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maintain pathogens at low levels. Research breeding programs are looking at developing disease resistant varieties; however, breeding resistance takes time. The meeting brought together over 200 growers representing all the growing regions in Montana. It was clear the drop-in pulse crop prices and international demand due to retaliatory tariffs was on the mind of the growers, but when a fellow pulse grower asked the attendees whether they would be dropping pulse acres, only a few hands were raised. The commitment to stay the course and keep pulses in their rotation was good news to processors. Farmers were urged to stick to their rotations and to continue to produce high-quality pulses because the markets will return and domestic demand is raising.

### Why Plant Seed Potatoes in Hawaii? By Steve Hystad

The MSU Potato lab has finished planting samples from the 2018 seed potato crop at Twin Bridges farm in Waialua Hawaii. Every year seed potato growers across the state submit samples for a post-harvest grow out. Over 600 samples were collected by Anna Jespersen and me shortly after harvest, treated to break dormancy, and shipped to Hawaii. Unfortunately, heavy rains prior to our arrival completely saturated the field



*Shawn Hystad, Steve Hystad, Nina Zidack and the crew.*



*Steve Hystad and Jon Agnew planting potatoes at Twin Bridge Farm in Waialua, HI.*



prompting the farm manager to shuffle us to another location. With a narrow window of suitable weather forecasted, Nina and I (with the help of Twin Bridges staff) were able to finish planting in two and a half days walking over 35 miles in recording plot locations.

So why do we plant seed potatoes in Hawaii each year? It's not just because we all need a vacation. Hawaii's rich soil and tropical climate provides an ideal environment to conduct a timely field evaluation for each sample submitted. Metrics such as disease incidence, varietal mixture, and chemical damage will be recorded through visual inspections at the end of December. Additionally, leaf samples from each plot will be shipped to our lab for ELISA testing of PVY, PVX, and PVA. The results of field evaluation and lab testing are used as an indicator for seed lot health. Montana's seed potato producers will then make important management decisions including whether to re-certify (re-plant in Montana) or sell the product out of state.

### **2018 Montana Science Olympiad By Emma Jobson**

On Tuesday, November 20, Mike Giroux, Emma Jobson, Alanna Oiestad, Tavin Schneider, and Justin Vetch volunteered for the Middle and High School State Science Olympiad competition. We arrived bright and early to begin preparing for our event. This year, we were in charge of the "Experimental Design" competition. Students were given a bag full of supplies (toy cars, bouncy balls, paper, tape etc.) and charged with designing and completing an experiment in the allotted time. Over 250 middle and high school students participated. It was great to see so much enthusiasm and excitement from future scientists!

### **New Employees**

Kirstin Ostberg - Instructor  
New to MSU this spring, Kirsten Ostberg will be teaching the second course in the year-long Sustainable Landscape Studio. As an



*Kirsten Ostberg*

educator for almost two decades, her teaching experiences range from high school chemistry to outdoor education to professional tutoring, and now, starting this spring, she is excited to add adjunct professor to that list. Kirsten brings a unique perspective to the classroom that is rooted in both her education and her varied professional experience. A Master's degree in Landscape Architecture from the University of Virginia, a Master's degree in Organic Chemistry from Columbia University, and her experience working as a landscape designer in urban and rural settings allows Kirsten to create a distinct framework in which to explore cultural sustainability in her course.

Originally from Toronto, Canada, Kirsten's insatiable love of learning has taken her around the world in pursuit of her formal and informal education. She fell in love with Bozeman during a visit almost 20 years ago and was finally able to call it home starting in 2015. Outside the classroom, she currently works as a landscape designer for Wildwood Nursery in Big Sky and owns her own tutoring company that provides academic support to students in Big Sky and Bozeman. In addition to teaching Sustainable Design, Kirsten also will be teaching a chemistry class at Gallatin College this spring.

### **Grants**

Mary Burrows, USDA, "Building a better lentil from the ground up".

### **Invited Talks**

Chaofu Lu, "Advancing camelina for bioenergy production through genetic, agronomic and biotechnology approaches". The 2018 ASA, CSSA, and CSA Annual Meeting in Baltimore, MD. Nov. 6. 2018

Mac Burgess, "Experiential Learning in the Sustainable Food and Bioenergy Systems Program at Montana State University", Ohio University, Athens, OH, Dec. 29, 2018.



Michelle Flenniken, "The impact of viruses on honey bees at the colony, individual, and cellular levels", 2018 Wyoming State Beekeepers' Association Annual Meeting, Casper, Wyoming, December 6, 2018.

Michelle Flenniken, "The impact of viruses on honey bees at the colony, individual, and cellular levels", 2018 Washington State Beekeepers' Association Annual Meeting, Spokane, Washington, November 16, 2018.

Michelle Flenniken, "Honey Bee Colony Health", 2018 Oregon State / Regional Beekeepers' Association Annual Meeting, Salem, Oregon, October 27, 2018.

Michelle Flenniken, "Honey Bee Colony Health", 2018 Montana State Beekeepers' Association Annual Meeting, Bozeman, Montana, October 18, 2018.

### **Publications**

David Sands, "Functional Food", The Furrow, November, 2017.

Lachowiec J, Mason G A, Schultz K, Queitsch C. 2018. "Redundancy, Feedback, and Robustness in the *Arabidopsis thaliana* BZR/BEH Gene Family", Frontiers in Genetics. 9:523.

Niranjan Aryal, Chaofu Lu. "A Phospholipase C-Like Protein From *Ricinus communis* Increases Hydroxy Fatty Acids Accumulation in Transgenic Seeds of *Camelina sativa*", Front Plant Sci. 2018;9.

Gary Strobel. "A Montana scientific Breakthrough pays off for cattle industry", The Billings Gazette, November 25, 2018. The article dealt with Strobel's work on developing an enhanced electrolyte solution for the treatment of scours (diarrhea) in cattle. Scours is the main killer of cattle in Montana. The product is sold by Ecoplanet under the name of Sx Calf. About 30,000 animals have been treated over the past three years with no complaints of non-performance. The main bioactive ingredients in the product are a small molecular weight

acid and three complex esters that act synergistically to affect microbial populations in the gut. The idea basically mimics that of the bioactive gas phase of Muscodor species. The article also announces that the USPTO has just issued a patent on the concept and approved the formula for the bioactive products. The full article with comments from users and vets can be accessed at:  
[https://billingsgazette.com/news/state-and-regional/montana/a-montana-scientific-breakthrough-pays-off-for-cattle-industry/article\\_b153ce58-8e58-55f9-a1ae-60d810f3e4ac.html?utm\\_medium=social&utm\\_source=email&utm\\_campaign=user-share](https://billingsgazette.com/news/state-and-regional/montana/a-montana-scientific-breakthrough-pays-off-for-cattle-industry/article_b153ce58-8e58-55f9-a1ae-60d810f3e4ac.html?utm_medium=social&utm_source=email&utm_campaign=user-share)

"From rainforest to research lab, how does this Montana scientist do it?", Billings Gazette, November 25, 2018. This article provides examples of discoveries and the promises provided by searching the forests of the world for novel products and ideas.  
[https://billingsgazette.com/news/state-and-regional/montana/from-rainforest-to-research-lab-how-does-this-montana-scientist/article\\_f81a4b70-392a-5f59-ba5d-118225603390.html?utm\\_medium=social&utm\\_source=email&utm\\_campaign=user-share](https://billingsgazette.com/news/state-and-regional/montana/from-rainforest-to-research-lab-how-does-this-montana-scientist/article_f81a4b70-392a-5f59-ba5d-118225603390.html?utm_medium=social&utm_source=email&utm_campaign=user-share)

### **You Can Grow Blackberries! By Toby Day, Extension Horticulture Specialist**

I have been trying to get a good crop of blackberries for years from five plants I have in my garden in Bozeman. It has been a struggle. However, this year I harvested about 15 gallons off those five plants! This is five times as many as I have gotten in the past. What was the difference? I think I finally got it figured out.

First, you may wonder why I am so excited about blackberries. Well, like many other plant nerds, I am always trying to grow things that are *hard to grow*. The reason that blackberries are so difficult is that they are mostly zone 6, while we live in zone 4. Plus, I really like blackberries. Not the ones





Photos from Toby Day's garden and harvest.



that you find wild in the Northwest, but rather the large, juicy ones like you find at the grocery store. Yum! I had one friend say, "They taste like sunshine!"

My first success was finding the cultivar 'Chester' which is listed in most catalogues as Zone 5. It was truly the hardiest blackberry I could find. 'Chester' is not only hardy, it is also thornless and the berries are firm, large and have good flavor.

In the last few years that I been growing 'Chester', I have determined that just one day of -30°F or below will kill any canes that are exposed above the snow. The area that was covered with snow was still alive and producing, but I would only get minimal blackberries.

Last year I decided to cover the canes with as much snow as possible. Luckily, last year we had plenty of snow. After we had a snowfall of light, fluffy snow, I would fire up the snow

blower and cover as much of the canes as I could find snow. The snow worked as a great insulator!

I did have some canes that broke due to the weight of the snow, but it was minimal. I also recognize that last year, while we were covered in snow, the minimal temperatures were milder than in the past. That also could have led to a better harvest. However, I think the game changer for growing blackberries is using snow or even heavy row fabric as mulch.

I am personally putting in another order for more 'Chester' blackberries this year. The more you buy, the less they are per plant. If anyone would like to go in on my order, let me know by emailing me at [toby.day@montana.edu](mailto:toby.day@montana.edu)

### Recipe of the Month

#### Slow Cooker Cranberry Barbecue Meatballs

50-60 frozen meatballs  
(store bought—Costco brand) or homemade  
14 ounce can whole cranberry sauce  
12 ounce cocktail sauce  
3/4 cup light brown sugar  
1 cup water  
1 cup barbecue sauce  
green onion finely chopped for garnish



Spray the bottom of your slow cooker lightly with cooking spray. Add frozen meatballs to the bottom of pot. In a large bowl stir together cranberry sauce, cocktail sauce, brown sugar, water, and barbecue sauce and pour over meatballs. Cook on LOW for 4-6 hours or HIGH for 2-3 hours. Serve warm garnished with chopped green onions, if desired.

If you don't have a slow cooker, you can make these in a saucepan: Add ingredients for the sauce to a saucepan and stir until smooth. Then add the meatballs and stir to coat. Bring to a boil, then reduce heat to simmer. Cook for 8-10 minutes for thawed meatballs, or 14-16 minutes for frozen meatballs.



## December Birthdays

Jeff Pashnik	2
Noelle Orloff	4
Jake Tracy	5
Nancy Blake	6
Doug Holen	10
Sue Brumfield	26

*Happy  
Birthday!*



*Mary Burrows, Monica Brelsford, Uta McKelvey, Jake Tracy, Emma Jobson and Matt Lavin ran in the Huffing for Stuffing. Not shown: Michelle Flenniken and David Baumbauer.*



*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!  
Autumn, Karen, Jill, Deanna, and Irene*