Jamie Sherman Joins Faculty

I would like to take this opportunity to introduce (reintroduce) myself as the new barley breeder for Montana State University. I have been at MSU since 1997 working primarily as part of the spring wheat breeding program. I came to MSU after a PhD and postdoc at Colorado State and a year as visiting faculty at Fort Lewis College. Before coming to MSU, my experience was primarily in basic genetics research – studying recombination and making genetic maps. Through my experience in the spring wheat breeding program, I have come to be a plant breeder by plant breeding. The focus of my work has been on making marker trait associations and employing those markers in molecular breeding. It is enormously satisfying to take knowledge and apply it to solve real world problems, which plant breeders do by creating new varieties.

I enjoy teaching and learning both in the classroom setting and by mentoring undergraduate and graduate students. I greatly increased my knowledge of plant breeding through participation in a coordinated research project that developed a collaborative hybrid training model, creating an online learning community called the Plant Breeder Training Network. I also have enjoyed communicating with stakeholders and developing communication tools in collaboration with design and film students.

My family and I enjoy living in our beautiful valley and take advantage of numerous outdoor activities, including skiing and hiking. My husband, Clark Sherman, is the rector of the local Episcopal Church. Our three children have grown-up here. One of the greatest things about having three grown children is that I get to enjoy their diverse interests and know a little more about the world through them. I am also lucky to have a granddaughter.

The Barley Breeding position provides a whole new set of challenges and opportunities to learn. Through interactions I have already had with industry and growers, it is clear that there is statewide interest in the work we are doing. It is exciting that what we learn and the lines we create can solve real problems. I look forward to getting to know each of you better and will enjoy working with all of you.

Sherman to Serve Three Year Term on Northwest Barley Improvement Committee

The Northwest Region has three representatives and is comprised of the following states: Alaska, Washington, Oregon, Idaho, Montana, and Wyoming. Dr. Tom Blake’s term expired and an election was held to fill that position. Dr. Jamie Sherman, wheat geneticist and now the new barley breeder & geneticist at Montana State University, has won the election and will serve a three year Washington D.C. term (2015-2017). The NBIC looks forward to working with Jamie for the benefit of small grains.

The NBIC serves as a national forum for discussion of matters important to barley research, production, and utilization; serves in an informational distribution capacity to all persons interested in barley; helps identify national and regional priorities and encourage their adoption and proper funding; and serves in an advisory capacity as is appropriate to national or regional groups. [http://www.ambainc.org/](http://www.ambainc.org/)

Jamie Sherman is the new barley breeder and Assistant Professor in the Department of Plant Science.
Sciences and Plant Pathology, Montana State University. She has worked in wheat genetics and wheat breeding since 1997, making new marker trait associations and creating lines using molecular markers. She leads the education component of the Triticeae Coordinated Agricultural project to recruit and train future plant breeders. Jamie is the current Chair of the Strategic Planning Committee for the National Association of Plant Breeders and Chair of the Plant Breeding Coordinating Committee, multistate committee SCC 080. In addition, she has represented the National Association of Wheat Growers during Congressional visits.

Jacobsen Receives Award

On January 20, 2015, Barry Jacobsen received an appreciation award from the Western Sugar Cooperative Joint Research Board in honor of his many years of sugarbeet research. The Western Sugar Cooperative includes factories in the states of Montana, Wyoming, Nebraska, and Colorado. Noted in the award was Dr. Jacobsen’s work on Rhizoctonia, Crown and Root Rot, Curly Top Virus, Fusarium Yellows, Cercospora Leafspot, seed treatments, identification of storage mold complex and means of control.

Congratulations Barry!

Triticeae CAP meeting by Nancy Blake

Luther Talbert, Afaf Nasseer, Andrea Varella, Roshan Acharya and I attended the Triticeae-CAP (T-CAP) meeting in San Diego held in conjunction with the Plant and Animal Genome (PAG) XIII conference. The T-CAP is a multi-institution grant project focused on improving wheat and barley in an era of climate change. This was the 4th year of the grant and the meeting highlighted the research of the T-CAP graduate students who are finishing their degrees. Several student projects centered around mapping genes such as barley spot blotch resistance and a rye drought resistance gene introgressed into wheat. A major focus of the overall T-CAP grant was implementation of new methods for high-throughput phenotyping for water and nitrogen use efficiency (WUE & NUE). Students at a number of universities evaluated canopy spectral reflectance instrumentation to determine NUE and WUE in large association mapping populations. While useful data was obtained with handheld instruments, several students suggested that sensors mounted on drones might work better. Another student project tested the effectiveness of genomic selection for winter hardiness and found that while not quite as effective as phenotypic selection it was possible to select earlier in the breeding cycle. Andrea presented her research on novel QTL for wheat stem sawfly resistance identified in an association mapping population. The quality of the student presentations and research was excellent, including our MSU students. Luther and I only attended the T-CAP meeting and returned to Bozeman after 2 days. The graduate students stayed on to attend the PAG conference described below.

Addendum by Afaf Nasseer

The Plant and Animal Genome (PAG) XIII Conference was held in San Diego January 9-14. On Friday afternoon, we attended the T-CAP (Triticeae-CAP) graduate student meeting from 4:00-8:00 pm where we met with other T-CAP graduate students who presented their research projects. This was followed by a great discussion about the T-CAP1 grant. Learning about all the technology that we have now and how we could improve the wheat cultivars in the future made for an interesting meeting. On Saturday, each of us attended several talks focused on topics we were individually interested in such as SNPs panels-Genotyping across Industries; Genomic Solutions for our Agricultural Future; Sequencing of Cotton A- Genome, Wheat
Sunday was entirely devoted to the T-CAP conference. At 5:00 p.m. we presented our posters and exchanged information. It was a very worthwhile trip.

**AMTOPP’s 25th Annual Winter Conference and Trade Show**  
By Laurie Kerzicnik
Toby Day, Eva Grimme, and I attended the annual AMTOPP (Association of Montana Turf, Ornamental & Pest Professionals) meeting in Fairmont Hot Springs on January 26 and 27. About 100 people attended the conference, and AMTOPP members include industry, pest control operators, regulators, state agencies, and extension agents. Toby and I were invited speakers, and Eva attended her 1st AMTOPP meeting to network and meet people across the state. My talk was “Spiders: Friends or Foes” and Toby’s talk was “Abiotic Issues in Turfgrass”. Some of the other topics included “Insect Control Methods in Trees”, “Biological Pest control”, “ID of Biotic and Abiotic Tree Issues”, and “Bed Bugs”.

During my talk, I focused on misconceptions and misinformation about spiders and hopefully changed some attitudes about spiders. Several people held the tarantula, including Toby!

One interesting fact I brought up is that some spiders have fine hairs on their legs called scopulae, which will allow them to climb almost any surface without silk or a web to assist them. A lot of spiders that get blamed for bites (like the hobo spider) don’t have these scopulae, so they are unlikely to be climbing up and down walls very easily. Toby addressed some key points with abiotic issues in turfgrass. He noted that too many times turfgrass professionals are looking for biotic issues (disease or insects) when most problems stem from abiotic issues such as watering, fertilizer, thatch, and/or compaction. His expertise with turfgrass has been an integral part of many of the annual AMTOPP meetings.

**Schutter Diagnostic Lab 2015 Webinar Series**  
By Eva Grimme
The Schutter Diagnostic Lab and the Great Plains Diagnostic Network will be offering the annual diagnostician webinar series beginning January 20, 2015. Webinars begin at 10:00 MST and are open to anyone who would like to attend. To join go to: [http://msuextensionconnect.org/gpdn/](http://msuextensionconnect.org/gpdn/). Please sign in as a guest with your name and affiliation.

Contact Eva Grimme (994-5150, eva.grimme@montana.edu) for questions regarding this webinar series or how to connect. All webinars are recorded and can be viewed later at [www.gpdn.org](http://www.gpdn.org).

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**The Mac Burgess Lab**  
By Mac Burgess
Research in Dr. Mac Burgess’s lab encompasses season extension and variety evaluation for fresh market vegetables and fruits, long-term maintenance of soil quality in intensive cultivation systems, and assessment of student critical thinking and active learning strategies. Our field research is performed at
the Horticulture farm and relies on assistance from undergraduate students, particularly Sustainable Food and Bioenergy Systems (SFBS) interns and Towne's Harvest Garden (THG) summer practicum students.

David Baumbauer, who started his PhD program in spring 2015, will be heading up the Season Extension Research Program (SERP). This research will include examining the trade-off between light transmission and heat retention of different types and combinations of row covers and high tunnels. This trade-off between light and heat will be evaluated directly with micro-meteorological instrumentation and as manifest in yield and quality of spring and fall-grown cool season vegetables in a movable high tunnel system. During the summer, variety trials of warm season fruits and vegetables will be done in the same high tunnels in collaboration with Scientists from NDSU and the Northern Plains Sustainable Agriculture Society. Other vegetables are being evaluated without season extension technology and we are planning a late-July field day with activities including sensory evaluation of different varieties of vegetables from different production systems. Vegetable variety testing is supported by a Specialty Crop Block Grant funded from USDA and the Montana Department of Agriculture.

Pending admission to the graduate program, Erin Durant will be joining us this summer to begin a MS degree and research project on soil quality in intensive vegetable production systems. Erin is interested in how producers interpret soil test results, how they choose whether to do soil testing at all, and whether small-scale producers could benefit from more access to soil testing services.

Two undergraduate students are currently working in the lab. Melissa Soddy is an SFBS Sustainable Crop Production major who aspires to operate a small vegetable farm after graduation. After completing the SFBS Towne's Harvest Practicum last summer Melissa spent the fall helping with high tunnel construction and establishment of fall-sown cover crops. In collaboration with Chaz Holt at Towne's Harvest and Dylan Strike at Running Strike Farms, we are investigating the trade-off between weed suppression and nitrogen fixation in mixed pea-wheat cover crops of different seed rates and planting arrangements in different soil conditions.

Rick Sadleir is an experienced restaurateur, produce buyer, and market gardener who has returned to MSU to earn a degree from the SFBS Sustainable Crop Production program. Rick will soon be helping with spring greenhouse management and we look forward to his assistance in the sensory evaluation portion of our variety evaluation program.

We are interested in how field practicum coursework and active learning activities affect student learning outcomes. We are collaborating with colleagues in the Division of Agriculture Education and the Department of Health and Human Development to measure/document the effect of the novel approaches to learning.
2015 Crop and Pest Management School by Kevin Wanner

I would like to thank everyone who helped make the 2015 Crop and Pest Management School a success! The 2.5 day workshop was held on campus January 5-7 with 47 students attending from various areas of the state. We did have 57 students registered but a Montana winter weather storm warning kept some students at home this year! “Small Grain Crops” was the theme and MSU speakers from four different departments that included the Eastern (Joyce Eckhoff) and Central (David Wichman) Ag Research Stations provided presentations. We hold the workshop in the EPS building where lecture hall 103 is equipped for remote presentations, which we tried (tentatively) for the first time this year. After 30 minutes of fussing by tech support, Joyce Eckhoff from the Eastern Ag Research Station was able to present her talk remotely, although, she could not hear us, or, advance the slides! So, Joyce would call out “next slide” from Sidney, and in Bozeman I would advance the PowerPoint presentation!

Special thanks go out to guest speakers who braved the winter weather and travelled from Minnesota (Ruth Dill-Macky, Professor of Plant Pathology) and Alberta (Scott Meers, Entomologist with Alberta Agriculture and Rural Development). The students always appreciate hands on activities. Hilary Parkinson and Jane Mangold provided a session on weed seedling identification and David Weaver ended the workshop by having students dissect wheat stems to identify the wheat stem sawfly and the beneficial wasp that kills it.

The class was a great mix of producers, crop consultants, commercial and government agriculturalists and county agents. Jane Mangold commented that this was the sharpest group yet to complete the weed seedling identification section. The quality of the students definitely helps motivate everyone to provide excellent quality information to support Montana’s agriculture.

Western SARE is acknowledged for providing $500 to assist with the registration fees for five students. Of course, none of this would have come together with out the administrative support of Irene and Tamara! Many thanks to everyone who took the time to speak at the workshop or otherwise help out this year!
New Employees
Jay Kalous - Jamie Sherman

Many in the department probably already know me but for those of you that don’t my name is Jay Kalous and I started as a post-doc on January 1st for new barley breeder, Dr. Jamie Sherman. I first moved to Bozeman back in June of 2008 working for Dr. Luther Talbert and the spring wheat breeding program. In the last six years, I earned my master’s and PhD from MSU, under Luther’s instruction. Before moving to Montana, I received my bachelor’s at Colorado State University and am originally from Northeast Colorado where I grew up on a family farm and ranch operation. I like to spend my free time fly fishing or hiking with my dog, as well as brewing the occasional beer. I am excited to start working on the new barley program and look forward to interacting with PSPP faculty, staff, and students.

Jason Cooke - Jamie Sherman

My name is Jason Cook and I am a new Post doc working with the winter and spring wheat breeding programs at Montana State University. I am essentially taking over Jamie Sherman’s research responsibilities as she moves on to lead the barley breeding program.

A little background on myself: I am originally from a small grains farm located in Northern Montana. I obtained my Bachelors and Masters Degrees from the Plant Science and Plant Pathology department at Montana State University-Bozeman. For my Masters degree, I worked under the supervision of Dr. Luther Talbert where my research focused on identifying DNA markers associated with wheat stem sawfly resistance.

From Montana State University, I moved to the University of Wisconsin-Madison where I received my PhD from the Plant Breeding and Plant Genetics department. I was advised by Dr. Heidi Keappler and my research focused on two different projects; 1) identifying DNA markers associated with enhanced plant regeneration in maize tissue culture, and 2) determining if RNAi can be used to inhibit aflatoxin accumulation in *Aspergillus* (fungus) infected maize kernels.

After completing my PhD, I went on to the University of Missouri-Columbia and North Carolina State University to work under Sherry Flint-Garcia and Jim Holland, respectively, as a Postdoctoral Fellow. My main project was to perform QTL/association analysis on maize kernel composition traits using the maize NAM population.

Looking forward, I am excited to be back at Montana State University and have the opportunity to once again work with the Plant Science and Plant Pathology faculty and staff members to conduct research that will further enhance Montana’s valuable agricultural economy.

New Graduate Students
David Baumbauer - Mac Burgess

I’m David Baumbauer and I’m a new PhD student in the Burgess lab. My research project will investigate season extension techniques applicable to small scale vegetable producers in the Northern Rockies. Last fall, three mobile high tunnels were constructed at the Horticulture farm and they will serve as the home for this study. How I came to be a graduate student after a thirty year hiatus is a story best told over a cold beer. I’ve managed the Plant Growth Center for the past 28 years and have a BSF in Forest Management from Purdue University and a MSF in Silviculture from the University of Montana.

My wife Cathy and I have two adult children, Sara a music educator in Wisconsin and Carol a junior in Electrical Engineering at MSU. We are avid bicyclists, Nordic skiers and river rafters.

Ashish Adhikari - Mike Ivie and Gadi Reddy

I am Ashish Adhikari and I am originally from Nepal. I received my undergraduate degree from the Institute of Agriculture and Animal Science (IAAS), Tribhuvan University, Chitwan, Nepal. Insects have always been my
area of interest. After receiving my undergrad degree, I worked as an Instructor of Entomology in a government school for a year. Then I got involved in project related to IPM, insect plant interaction and soil management in NGOs and INGOs.

As of this spring semester, 2015, I have joined PSPP department to pursue my Master’s degree in Entomology with Dr. Reddy and Dr. Ivie as my advisors. My project will be focusing on soil borne insects, especially wireworm and their management strategies. In my view, MSU is a beautiful place with very qualified, supportive faculty.

Course Focus
BIOB 160 – Principles of Living Systems
by Luther Talbert

This course introduces students to basic cellular and molecular biology. In fact, that was the name of the course before the current ambiguous title was assigned in 2010. The first half of the semester focuses on Cell Biology and is typically taught by faculty external to PSPP. Genetics is the focus of the second half. Drs. Sharrock and Talbert in PSPP currently enjoy this assignment. There are typically 150-250 students in the class, some of whom have an interest in genetics and are willing to expend a certain amount of intellectual energy to become acquainted with the subject. Seriously, the introduction to cellular biology and genetics is interesting for many of the students, and they are usually fun to interact with. Teaching the class sometimes even helps the instructors remember that biology is interesting, sometimes amazing, and in fact almost unbelievable the way life works. The instructors may even be reminded why they chose biology as a career path in the first place.

Teaching a large class has its own challenges, which a retired colleague, whom we will refer to as RS, likened to fishing on a big river. Standing beside the Madison and viewing the river from bank to bank makes it hard to know where to throw your worm (or your ‘fly’ if you are a more sophisticated angler). However, if you look at the river as a series of creek-sized corridors, you see the same fish habitat as you would on small creek. By analogy, surveying a class of 200 as a whole also presents a challenge in focus, which can be overcome by seeing the class as a series of smaller blocks. This gives the instructor a place to focus attention – a target for the lure to see if anyone will rise to the surface. I suppose one difference is that when the fish become inattentive you can go to the cooler for a cold beer, while it is frowned upon to pack up and go to the bar when students are inattentive. Fortunately, complete absence of focus from students only sometimes happens.

The instructors for this class have an added incentive to make sure students learn something, which is that they will see many of them later in Genetics. A surprising observation is that retention time for certain subjects, such as meiosis, does not always extend much beyond the final exam! If that far! However, one hopes that the introduction received in BIOB160 makes higher level classes more sensible for those students that continue to study biology. BIOB160 may also be the last biology course for many students, who may better understand genetic and cell biology topics that arise in society and their own lives. These are the primary reasons that the class has a high enrollment. Incidentally, BIOB160 is required for many majors.

Publications

Note regarding the publication above: It is an important piece of research in the area of global Food Security or as the Director of USDA NIFA, Sonny Ramaswamy calls it, “one of the wicked issues“ we must solve!


Cathy Cripps’ Website
An insight into the current research that Cathy Cripps is doing can be found at this website: http://www.montana.edu/news/15286/msu-study-native-fungus-could-be-another-tool-for-helping-restore-ghostly-forests.

Grants
Mary Burrows, Montana Department of Agriculture, “Detection of fungicide resistant Ascochyta blight”

Michelle Flenniken, Montana Department of Agriculture, “Montana’s Bee Viruses: Identification and Transmission”

Barry Jacobsen, Montana Department of Agriculture, “Development of Extension Education Aids for Seed Potato Growers and Better Understanding of Induced Systemic Resistance on Potato Diseases and Aphid Virus Vectors”

Norm Weeden, Northern Pulse Growers Association, “Analysis of the genetic basis of stem strength in a Delta x landrace population and continuing efforts to identify En and Fw”

Pinterest for Gardeners
By Toby Day
Extension Horticulturist
Are you in search of gardening ideas? The social media web and mobile application Pinterest is one way that you can find inspiration, ideas, information and even have the ability to show off your own garden ideas (among other interests). From their website “Pinterest will help you discover ideas for any projects or interests, hand-picked by people like you. You can “pin” anything you want to save and organize them however you want.” Rather than just bookmarking websites, this tool allows you to store pictures (and thus, websites) that you find on the Internet (and those you have) and file them in folders (boards) of your choosing. Before the Internet, many can remember cutting out pictures or articles and putting them into folders that were of similar interests or topics. Now it can be done online with this application.

However, Pinterest goes farther by allowing you to see other people’s boards with the same interests. Those who are following you can see what you have posted (similar to friends on Facebook). It is a literal feeding frenzy of information and ideas. I use this application for everything from kitchen ideas, how to and ideas for restoring my Volkswagen, to gardening ideas. I currently get a lot of inspiration and ideas for my own garden from Pinterest.

The application is searchable too. If you want to look up what others have pinned, let’s say raised bed gardens, you will find many ideas, tutorials and other items that are related to raised bed gardens. It will definitely help you decide how you might want to build, plant or maintain your garden. It really is more than “a girl’s app for finding cute shoes or clothing” which is how it was once described to me. It is becoming one of the largest social media apps today. If you would like to learn more about Pinterest and how it can help you find gardening (and other) inspiration, creative ideas and information, check out the website www.pinterest.com.

If you are already on Pinterest, I encourage you to look at all the really cool gardening ideas and boards that are sure to inspire your gardening in 2015! See next page for a sampling of Pinterest gardening ideas.

Recipe of the Month
Raspberry Truffle Tart
Preheat the oven to 350 degrees F (180 degree C). Have ready a 8 - 9 inch (20 - 23 cm) fluted tart pan.

Biscotti Crust:
8 ounces (225 grams) store bought biscotti, broken into pieces
5 - 6 tablespoons (70 - 84 grams) unsalted butter, melted

In your food processor, place the biscotti and process until finely ground (or you
cold put it in a ziplock bag and take our your frustrations with a rolling pin). Transfer to a bowl and add the melted butter. Stir to combine. Press this mixture over the bottom and up the sides of the tart pan. Bake in the preheated oven for about 15 minutes or until golden brown. Remove from oven and place on a wire rack to cool completely before adding the filling.

**Raspberry Truffle Filling:**

1/3 cup (80 ml) raspberry sauce (recipe follows)
10 ounces (280 grams) semi sweet or bittersweet chocolate, chopped
1 cup (240 ml) heavy whipping cream (contains 36-40% butterfat)

First, make the raspberry sauce. Place 1 cup of fresh or frozen raspberries, that have been thawed, in your food processor and process until the raspberries are broken up. Pour into a strainer, set over a bowl, and gently press the raspberries to extract their juices. Add sugar to taste. You will need 1/3 cup (80 ml) of raspberry sauce.

Place the chopped chocolate in a medium sized stainless steel bowl. Heat the cream in a saucepan over medium heat. Bring just to a boil. Immediately pour the boiling cream over the chocolate and allow to stand for 5 minutes or until melted. Stir until smooth. Stir in 1/3 cup of the raspberry sauce. Pour the chocolate filling into the baked and cooled crust, smoothing the top with an offset spatula. Cover and refrigerate overnight.

**Raspberry Sauce:**

1 cup (240 ml) fresh or frozen raspberries (that have been thawed)
2 tablespoons (30 grams) granulated white sugar, or to taste

**Garnish:**

Fresh raspberries

**To Serve:** Cut into small slices and serve with fresh raspberries, raspberry sauce, whipped cream and/or crème fraîche. Serves about 12 - 14 people.

**February Birthdays**

Jeff Johnston 2
Norm Weeden 12
Carmen Pol 14
Alan Dyer 15
Phil Bruckner 17
Niranjan Aryal 22
Pam Szelmeca 23
Hwa-Young Heo 24