

Plant Science *Says*



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The Department of Plant Sciences and Plant Pathology

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The Gallatin Valley Farm Fair By Eileen Carpenter and Kim Siemsen

For the 11th year running, the Gallatin Valley Ag Committee put on the Gallatin Valley Farm Fair. Open to all fourth graders in the valley, Farm Fair is an opportunity to experience life on a farm and learn where our food comes from (potatoes, grains, meats, and milk). Overall, Farm Fair serves to show students how important agriculture is—not to mention how drastically our everyday life is impacted by agriculture. The Brainard family has graciously hosted the Farm Fair on their Manhattan farm every year since its inception.

Sixteen stations were set up in livestock stalls and large tents, each station covering a different aspect of agriculture, including: milking cows and goats, forestry and water cycles, beekeeping, sheep/textiles, crops, pigs, sheep, horses, 4H...there was a bit of something for everyone. Though the potato booth—where students were able to dig up their own potato plant—was among the most hands-on, the baby goats and homemade ice cream stations beat us all out for the overall “favorite” station. In attendance this year

were 860 students and with rotations happening every 15 minutes long, we all learned each other’s spiels!

Heather Rimel of the Montana Seed Growers Association is one of the organizers of Farm Fair. Many presenters came from the PSPP Department. Ron Larson, Phil Bruckner, Jim Berg, Mary Burrows, Jason Cook and Larry



Laura Brutscher and Elisa Boyd demonstrating bee keeping equipment, basic bee biology and why honeybees are important.



Susie Siemsen and Becky Huntsman showing students how to harvest potatoes.



Mary Burrows talking about the diseases and abiotic problems of wheat and barley.

Holzworth took their turns talking about grains and crops. Michelle Flenniken, Dave Kennedy, Laurie Kerzicnik, Amy Dolan, Madison Martin, Katie Daughenbaugh, Ruth O'Neill, Kevin Wanner, Will Glenny, Elisa Boyd, and Laura Brutscher each informed the students about the art of beekeeping and the importance of honeybees and pollination. Susie Siemsen, Becky Huntsman, and Eileen Carpenter, along with students Kim Siemsen and Geraldine Walker talked about growing healthy potato plants and the importance of disease-free seed. The Ag Fair is put on by the Gallatin Valley Ag Committee which is composed of the Bozeman and Belgrade Chambers of Commerce.

A great deal of time and energy goes into making Farm Fair a success and it is all worthwhile because of how eager the children are to learn about farm life - all the questions they ask, the lights in their eyes when they learn they get to dig in the dirt...nothing can top it. Farm Fair truly is a phenomenal event, and I would encourage anyone to come out next year and poke around to see what it's all about!

What's Next for Graduating Grad Students Afaf Nasseer

When I was offered the opportunity to complete my doctorate at Montana State University, I mainly thought of the family that I was leaving behind, the cultural change, and the temperature shock! Despite all the obstacles, I decided to undertake this adventure. And despite all the challenges, I finally have graduated with a doctoral degree. From this amazing adventure, I will recall only the positive aspects: My new degree, the vast knowledge and experience I have acquired, my wonderful advisor and graduate committee, amazing lab mates, and all the other nice people that I have met, and the new country I discovered. I will head back to my wonderful



Afaf Asseer with advisor, Luther Talbert

home country Baghdad/ Iraq empowered and enriched, and will contribute to the improvement and updating of agricultural practices in my field of expertise.

Edward Barge



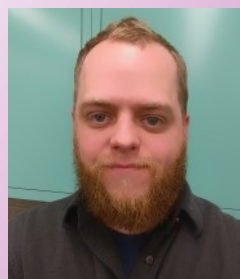
I completed a Master's degree in plant science (with a focus on mycology) in May of 2015. As a master's student in the Department of Plant Science and Plant Pathology I have had an excellent experience. I

have strengthened my background in the biological sciences through course work, lab work, attending and giving seminars, research, and publication. I also really enjoyed TAing the classes Mycology, Ecology of Fungi, and Seed Plant ID, and presenting at the 2014 Mycological Society of America meeting in East Lansing, Michigan. My master's research focused on molecular and morphological systematics of the ectomycorrhizal genus *Lactarius* in the Rocky Mountain alpine zone.

This summer, I will be working here in the plant diagnostic lab assisting Dr. Eva Grimme with plant disease identification and database entry, and also in the mycology lab with Dr. Cathy Cripps. My long-range goal is to complete research at the PhD level in preparation for an academic career in some aspect of mycology. I am very interested in teaching and in research focusing on fungal evolution, ecology and biogeography.

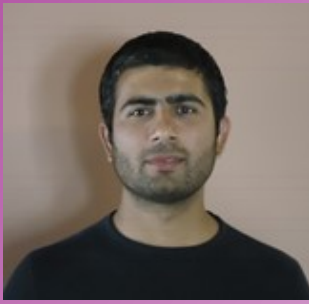
I have had a wonderful time as a graduate student at MSU. This experience was greatly enhanced by fellow graduate students and faculty. I would especially like to thank Dr. John Sherwood for support, Irene Decker and Tamara Parnell for endless assistance, my committee members Dr. Matt Lavin and Carol Johnson, and last but not least my advisor Dr. Cathy Cripps.

Jay Kalous



I am currently working for Dr. Jamie Sherman and the Spring Barley Breeding Project as a post-doc. We just successfully completed planting and now are in the process of getting the molecular lab up and running. My future plans are to eventually find employment as a plant breeder in the private industry.

Vipan Kumar



I have graduated with my PhD degree in plant science from the Department of Plant Sciences and Plant Pathology (PSPP) under the supervision of Dr. Prashant Jha (Assistant Professor-Weed Science at MSU Southern Ag.).

My dissertation research was focused on "Confirmation and Management of Glyphosate-Resistant Kochia (*Kochia scoparia*) in Montana" and stretched over four years. I have enjoyed my last four years in PSPP although I spent most of my time at MSU Southern Agricultural Research Center near Huntley. Recently, I have accepted a position as a Postdoctoral Research Associate with Dr. Jha at the MSU Southern Ag Research Center. The position will start June 1 and I am looking forward to working at SARC. In this role, I will continue my research efforts on the biology and management of multiple herbicide-resistant (MHR) kochia (resistant to glyphosate, ALS inhibitors, and dicamba) in Montana. My major research focus will be to investigate underlying mechanisms of herbicide resistance, understanding the ecological fitness of MHR kochia under diverse environmental conditions, evaluating old and new herbicide chemistries for weed control, and developing integrated weed management strategies for resistance management. Besides these research activities, I will also lead and assist summer interns, graduate students and others involved in the weed science program with Dr. Jha. I am looking forward to extending my abilities and skills in the weed science discipline.

David May



Currently, I'm working in Alan Dyer's lab as a research associate, introgressing various disease resistances into some adapted Montana lines. If you poke your head in the West Wing of the Plant Growth Center, you'll probably see me in there making crosses. We're also evaluating lines for disease resistance both

in the greenhouse and in the field, as well as trying to get a couple of manuscripts put

together for publication. I plan on starting a PhD program next fall.

Cecil Tharp



Cecil plans on continuing his employment as the MSU Extension Pesticide Education Specialist. This will consist of coordinating the Montana private applicator program, delivering pesticide recommendations to

the public and training pesticide educators in delivering programs to Montana pesticide applicators. He also plans on enjoying time with his family in the high mountain meadows of Yellowstone or camping on the beaches of Hebgen or Canyon Ferry Reservoirs.

Outstanding Senior Award



Congratulations to Joshua Pecukonis, this year's winner of the Outstanding Senior Award for the PSPP Department.

Regarding future plans, Josh said, "My dream has always been to open a garden center, so I plan to

work toward that. I have always wanted to be my own boss and sell plants for a living. Every dollar I earn and every step I take gets me a little closer to that goal. My network of friends and family have been very supportive in encouraging me to pursue my dreams; I feel like I have an army waiting behind me of people willing to help as soon as I give the word. I'm taking it one day at a time, and in the meantime I can be found in Bozeman enjoying the simple pleasures of my chickens, bees, and flowers."

**Course Focus
HORT 345 - Market Gardening
By David Baumbauer**

Market gardening class focuses on small scale intensive production of vegetables, flowers, and herbs. The course utilizes the garden plots and high tunnels at the horticulture farm, where students learn to analyze a soil test, prepare the garden for planting, and practice a variety of seeding



The HORT 345 class at work at the Community Café garden.



HORT 345 students seeding radish, salad turnips, and salad mix into one of the mobile high tunnels.

and transplanting methods. Students investigate the various direct market opportunities available to growers in the region as well as integrated pest management approaches to weeds, insects and diseases. New this year is a service learning component as the class has designed and installed the kitchen garden beds at HRDC's Community Café.

Field trips to area farms and the infamous trip to David's bee yard round out the last week of class.

New Employees

Noelle Orloff



This month I started as the new plant identification diagnostician in the Schutter Diagnostic Lab. I have been enjoying visiting with homeowners, farmers and ranchers, and Extension agents about their plant questions, and it has been great working

with the other diagnosticians in the lab. Every morning it is exciting to see what plant samples will come in the mail. Highlights so far have been an orchid and a plant-like aquatic algae.

Though I just started in this position, I have been working on the MSU campus since 2009, first as a graduate student, and then as a research associate. I earned my master's degree in the LRES department, where I did research on ecologically-based management of *Bromus tectorum* in rangeland and cropland ecosystems.

In my free time, I like to garden and irritate my husband by incessantly photographing and pointing out all the fun plants we see on our adventures.

Montana Ag Live! Schedule for June

June 7 - Cathy Cripps, "Montana Mushrooms, Where to find them and when to find them"

Publications

Microbial Ecology

Volume 69 Number 4
May 2015



Springer

69(4) 723–922 • 248 ISSN 0095-3628

Cover photo for Volume 69, Number 4, 2015: A fruiting body of the polyporus mushroom-*Ganoderma* sp. This organism has many relatives mostly in tropical regions of the world. This photo was taken in the northern reaches of the rainforest of Guyana, South America. It is obviously associated with the roots of an adjacent tree. These organisms have a role in traditional medicine and have potential use in bioremediation. *C. lucidum* is the causal agent of major root

rotting diseases in many parts of the world. Another relative - *C. boninense* which causes butt rot of oil palm remains in the soil and seems to be partly responsible for the oil palm replant problem. Thus the palm oil industry must continually open new areas for plantation development with the subsequent demise of the rainforest especially in S.E. Asia. Photo courtesy of Gary Strobel.

Gary Strobel, (2015) Bioprospecting- Fuels from Fungi. *Biotech letters*. 37: 973-982.

Grants

Rebekah VanWieren, Faculty Excellence Grant, MSU, 2015-2016.

Patents

Gary Strobel, "Composition of volatile organic compounds and methods of use of Muscodor --- issued March 3, 2015. USPTO 8,968,798.

Flea Beetles in the Garden

By Toby Day, Extension Horticulturist

Every summer I get inundated with calls and emails about what to do about flea beetles in the garden. Flea beetles are tiny and very common "jumping" beetles that start to appear when it warms up in June. Flea beetles are quite noticeable in the summer due to the "shotholes" that they leave from feeding on the foliage of garden plants. Vegetables that are affected are potatoes, tomatoes, eggplant, beans, lettuce and other greens, and anything in the mustard family (*Brassicaceae*). This includes radish, broccoli, cabbage, cauliflower, Brussel's sprouts, and turnip. This is only a short list, there are several other garden plants that can be affected.

Why so many hosts? It is because there are several species of flea beetles that attack



Flea beetle "shot holes" and adult beetles on radish (www.missouribotanicalgarden.org)

different plants. Not all flea beetles are the same. Some cause "shotholed" leaves while others, such as the tuber flea beetles, lay eggs that eventually hatch into larva that cause tuber damage. Altogether they are quite a nuisance.

So, what can you do about them?

My first response is to take a deep breath. They really aren't that bad, and rarely cause enough damage to the plant to warrant loss of sleep. Most often, mature plants in the garden can withstand some flea beetle damage (especially the leaf feeders). And, unless you are selling your produce, it really is only cosmetic. The only time that you really need to be wary of the nuisance is when plants are in the seedling stage. After the plants have matured they most likely will outgrow the flea beetle damage, as the beetles only feed for a few weeks.

So here are my recommendations (really, they are Whitney Cranshaw's from Colorado State University) which you can read in his fact sheet <http://www.ext.colostate.edu/pubs/insect/05592.html> with a bit of my own input.

Cultural Controls:

Try to get seedlings up as fast as possible. This might require waiting until the soil warms up a little more. People that try to get their gardens in early often have slow seedling establishment due to cool soils.

Use trap crops when seeding. Radish seed is cheap. If you are planting higher value cole crops, the flea beetles will prefer the radish and will congregate on the radish rather than on your cabbage or arugula. If you are like me and prefer tomatoes or potatoes over eggplant, use the eggplant (potato flea beetles love eggplant) as a trap crop. Once the populations die down, you can just destroy the trap crop.

Mechanical or Physical Controls:

If you want to keep flea beetles off your plants, purchase some spun row cover (polypropylene garden cover that transmits light, keeps heat in and allows air movement). A "floating row cover" (put directly on the crop) will exclude the beetles from your garden crop fairly well. Most garden centers carry them, and they only need to be on the crop for a few weeks until the beetle populations diminish.

Chemical Controls:

There are several pesticides from carbaryl to bifenthrin available for flea beetle control. However, pesticides are rarely warranted and be sure to read the label if you want to take that step. Most will need repeat treatments.

Ticks in Montana

By Laurie Kerzicnik, Extension Entomologist



The female is on the right and the male is on the left.

The most common tick we have here in Montana is the Rocky Mountain wood tick, *Dermacentor andersoni*. This is common throughout most Montana counties. We also have the American dog tick,

Dermacentor variabilis, which can be found mostly in the eastern counties in Montana. We currently do not have either the black-legged tick, *Ixodes dammini*, (formerly the deer tick) or the western black-legged tick in Montana that transmit Lyme disease.

Preventing or reducing ticks on you:



If you are out in an area with tall grass, shrubs, and woody ornamentals, you might encounter ticks. Wear long-sleeved shirts and long pants and tuck your shirt in. Light colored clothing will help to spot ticks crawling on your

clothing. Try to keep the ticks on the outside of your clothing to make them easier to see. Always do your tick checks right afterwards. Spraying the insect repellent DEET on your pant legs from your knees to your shoes will help prevent ticks from crawling on to you.

Tick removal:

When removing ticks, you want to remove them as early as possible. There are some common "tick removal methods" that are not suitable anymore but have become somewhat folklore. The "backing out the tick with a match" technique is one of these "folklore" methods, and ticks do not detach this way. It is important to try to thoroughly remove the tick and to try to remove the mouthparts. The tick has a hypostome, which is barbed and used for insertion into the skin. If this breaks off, it can be a further source of irritation and

possibly infection. Also, the crushing of the mouthparts can allow for disease transmission to occur through the skin if not removed properly.

Place forceps (try to use blunt curved forceps or tweezers) around the tick and as close to the skin as possible. Remove the tick with a steady pull away from the skin. Try not to jerk or twist the tick. Avoid getting or crushing any tick parts on you. Put it in a crush-proof container with rubbing alcohol to kill it, and send it to your extension agent or to the Schutter Diagnostic Lab (diagnostics.montana.edu) for identification. Disinfect your skin with alcohol and wash your hands with soap and water.

Please refer to the MSU Extension publications below from Dr. Greg Johnson, MSU Veterinary Entomologist, for further information.

http://store.msuextension.org/Products/Ticks-of-Veterinary-and-Public-Health-Importance-in-Montana_EB0198.aspx

http://store.msuextension.org/Products/Ticks-on-Companion-Animals_MT201303AG.aspx

Never too Young!

By Eva Grimme

On Thursday, May 21, the Schutter Diagnostic Lab hosted thirteen four year olds including Mary Burrows' daughter Cora. They learned how to look at plants under the microscope, how to mix colors and come up



Mary Burrows giving instructions on the use of the microscope.



with new colors, how to use a magnifying glass, spider basics, including which spiders are beneficial as far as controlling other insects and which spiders are poisonous spiders. A week later, they were still talking about all they had learned.

Recipe of the Month

Mediterranean Chicken Breast and Wild Rice
(4 servings) Very good!



1 lb bones/skinless chicken breasts, lightly pounded
Kosher salt, to taste
Black pepper, to taste
1 c wild rice blend
10 cloves garlic, smashed

1/2 c oil-packed sun dried tomatoes
1/2 c capers, drained
2 c water
1/2 c fresh squeezed lemon juice
1/4 c extra-virgin olive oil

Season chicken with salt and pepper. Place chicken in crock pot. Add rice, garlic, tomatoes and capers. Stir well.

Mix water, lemon juice and oil in small mixing bowl. Pour mixture over rice and chicken. Stir once to coat chicken. Cover once to coat chicken. Cover, cook in crock pot on low for 8-10 hours.

June Birthdays

Jill Scarson	3
Ron Larson	12
Li Huang	12
Jennifer Britton	12
Mac Burgess	13
Ron Ramsfield	15
Jackie Kennedy	15
Luther Talbert	18
Eileen Carpenter	22
Bill Hoch	25



Go to next page to see photos of PSCP Graduation Reception!

PSPP Graduation - Spring 2015



Back Row: Rob Partain, Joshua Pecukonis, Scott Samson, Michael Logatto, Tyson Stillman, and Ed Barge
 Front Row: Charissa Bujak, Cornelia Reid, Afaf Nasseer, and Vipan Kumar

First Row: Tracy Dougher, Charissa Bujak, Bill Hoch, Joshua Pecukonis, John Sherwood, Graduating students, Tyson Stillman, Jack Martin, Dean Charles Boyer
 Short Second Row: Afaf Nasseer, Ed Barge, Tyson Stillman and audience, Michael Logatto, Florence Dunkel, Luther Talbert, Mike Giroux
 Second Row: Bill Dyer, Tyson Stillman, Andrea Varella, Jamie Sherman, Afaf Nasseer, Department Head John Sherwood, Mike Giroux, Afaf Nasseer, Luther Talbert, Jack Martin, Cathy Cripps, Cheryl Moore-Gough, Cornelia Reid, Jennifer Britton, Scott Samson, Rebekah VanWieren
 Third Row: Michael Logatto, Bill Hoch, Tracy Dougher, Joshua Pecukonis and mom, Tracy Dougher, Rob Partain, Ed Barge, Cathy Cripps, participants, Jason Cook, Mac Burgess
 Fourth Row: Audience, Cornelia Reid and mom, Vipan Kumar and wife, Tyson Stillman, and fiancée, Participants, Scott Samson and Mom, Michael Logatto and mom