Plant Science Says


Photo taken by Courtney Speegle

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Welcome PSPP Students

The Department of Plant Sciences and Plant Pathology started the school year with 133 undergraduate students. Many of the students are majoring in Environmental Horticulture with 35 Environmental Horticulture Science students and 47 Landscape Design undergrads. Twelve students are studying Crop Science, five are majoring in Plant Biology, and 19 are biotechnology students. The Crop Production option of the Sustainable Foods & Bioenergy Systems major increased their total number of student to 15. This is the second year of the SFBS program.

We also added eight graduate students this semester, bringing the total to 20. Half of the students are working toward their Master of Science in Plant Science, one student is studying for a Master of Science in Plant Pathology, and two students are enrolled in the Master of Science in Entomology program. The department has seven PhD students; four in the Plant Science program and three in the genetics option.

Welcome to our undergraduate and graduate students!

Sustainable Food and Bioenergy Systems Program
By Mary Stein

After three semesters, the new interdisciplinary Sustainable Food and Bioenergy Systems (SFBS) bachelor's degree program is making a splash on the MSU campus. Since the program began in the Spring of 2009, the SFBS program has allowed for students to choose from three different options, administered by the cooperating departments, including Agroecology in the Department of Land Resources and Environmental Sciences, Sustainable Crop Production in the Department of Plant Science and Plant Pathology, and Sustainable Food Systems in the Department of Health and Human Development. Beginning this fall (2010), a fourth option is available to students, Sustainable Livestock Production, administered through the Department of Animal and Range Sciences.

The SFBS program is growing rapidly, with over 50 students currently enrolled in the various options. This is an interdisciplinary program, emphasizing systems thinking and hands-on learning. The SFBS program connects the science of food and energy production with the study of issues surrounding its consumption. SFBS graduates will be capable of addressing the multi-factorial problems facing Montana's food system such as loss of family farms and declining rural economies, ecological issues related to agricultural systems, food insecurity and nutrition related public health problems. Jobs for graduates with these skills are quickly sprouting and rapidly increasing in number.

Towne's Harvest Garden Production Manager, Chaz Holt, talks with students. Courtesy of Katie Henderson

At the core of the SFBS program are two field experiences. The first is at Towne's Harvest Garden which is a student-run three acre diversified market garden farm, located just a mile west of campus on the MSU Horticulture Farm and Ag Experiment Station. At Towne's Harvest Garden, SFBS students learn basic production skills, run a Community Supported Agriculture program, provide produce to the Gallatin Valley Food Bank and market their produce at area Farmer's Markets as well as at a new campus Farm Stand.

Produce from Towne's Harvest Garden on Display. Courtesy of Katie Henderson

The second required SFBS field experience in an off-campus internship that occurs in the senior year of the program, where students are placed in internships with Montana farmers, ranchers, food enterprisers, policy makers, non-profit organizations or other related sites.

SFBS Students Tour the Quinn Farm in Big Sandy, Montana. Courtesy of Katie Henderson

The SFBS Program at MSU aims to help develop the next generation of food system leaders in Montana and beyond, helping them attain the knowledge, skill and curiosity to advance the goals of a self-reliant and sustainable food and energy system. For more information on the SFBS Program at MSU, contact SFBS Program Coordinator, Mary Stein at mstein@montana.edu or 994-5640. Visit the SFBS Website at http://sfbs.montana.edu.

American Society for Horticultural Science Conference, August 2-5, 2010
Palm Desert, CA
By Tracy Dougher

The sweltering heat could not keep horticulture researchers and teachers away from the 107th annual American Society for Horticultural Science conference at the JW Marriott Resort & Spa.

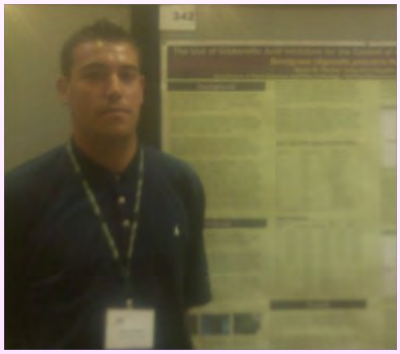
As chair of the Collegiate Activities Committee I was involved in many aspects of running the conference, including organizing the undergraduate student poster and oral competitions, and the undergraduate commodities judging competition. Nineteen schools competed in the research presentations and six schools competed in the judging competition. Controversy regarding the merging of the ASHS student competition with the horticulture honor society Pi Alpha Xi's competition emerged and a lively discussion ensued. I have more debate over this issue to look forward to in the coming year.

I spent a few moments chairing the Teaching Methods working group (one year stint). We organized a workshop on teaching sustainable horticulture for this meeting and will be presenting a workshop on 'teaching on a shoestring budget' for the next meeting.

I also represented our Department Chair on the panel of department chairs for a discussion on "Life After Graduation" for students considering graduate school. The

discussion centered around the two-tiered systems that most universities are now embracing with tenure-track faculty focused on research and adjuncts handling teaching. The implication for potential graduate students is that they may need to decide early on which track they want to follow. It was saddening to see department chairs gesturing to describe the two-tiered system with teaching falling below research.

In my spare time at the meeting, I presented a poster entitled "Native Grass Sod Suitability for Transportation and Competition with Resident Weeds" and attended sessions on plant nutrition, teaching, and controlled environments.



Bryce Fischer, a recent graduate of our Horticulture Science program, presented a poster in the undergraduate student poster competition. Bryce presented the research "The Use of Gibberellic Acid Inhibitors for the Control of Annual Bluegrass (*Poa annua* L.) in Creeping Bentgrass (*Agrostis palustris* Huds.) Putting Greens " from his senior capstone course.

Next year's meeting will be in Waikoloa, Hawaii.

Entomologist links with Engineer and Sociology Professors to present Symposium Round Table at American Association of Teachers of French
By Florence Dunkel

No, there is no error in this headline. The Expansive Collaborative initiated this past decade at Montana State was invited to present themselves and their pedagogy to the North American French teachers. Five professors from the USDA Higher Education Challenge grant, including the PI, Florence Dunkel, converged on Philadelphia 6 July 2010. MSU professor of French Language and Literature, Dr. Ada Giusti, was the organizer and chair for the event. Three professors presenting at the symposium were from University of St. Thomas in St. Paul, Minnesota. They presented their students work with our PSPP graduate, Aissata Thera and with Abdoulaye Camara and the development of village-based certified seed potato production. The sixth person on the team was a French teacher from Helena High School who had been part of the MSU-linked USDA Secondary Education Challenge grant (Dr. Walt Woolbaugh, PI) who worked with Florence Dunkel and the village-based malaria IPM in Mali.

Attendees decided that this linkage presented, particularly with the entomology and plant pathology component, was an excellent way to provide service learning opportunities in Francophone countries for their students. The agriculture-oriented and engineering students clearly gained from the cultural approach of the French students as well as their translation of conversations and documents. The French departments gained a reason for being in providing service for engineering sciences, particularly the agricultural sciences.
As a result, a book on service learning using the Expansive Collaboration Model was planned and begun by one of the symposium attendees, a professor of French at

AATF Symposium speakers strategize in "transdisciplinary language" and reminisce about seed potato production and malaria teaching and research in Mali while gathered in a Philadelphia sidewalk cafe in 100 degree F. weather.

Texas A&M University. Hooray for the Expansive Collaboratives!

MSU Herbarium Update
By Matt Lavin

The Montana State University Herbarium houses around 70,000 plant specimens collected from throughout all of the 56 Montana Counties since the late 1800's. These specimens were originally used to document the demise of livestock range and whether the cause was due to over stocking or air pollution from mining. Today these specimens are used for many reasons all centering on ecological and biodiversity research. In collaboration with the herbaria at the University of Washington, University of Idaho, and Oregon State University, the Montana State University Herbarium was recently awarded a National Science Foundation grant to image all Montana specimens and integrate these images into the online database of The Consortium of Pacific Northwest Herbaria (http://pnwherbaria.org/). The grant covers the cost of imaging equipment as well as funds to hire a graduate student, Ryan Quire, who is in charge of the imaging project. Specimens from the MSU Herbarium should begin to be accessible online through the portal of the Pacific Northwest Herbaria by early 2011.

Ryan looking over the geographical distribution of a plant species (Sueda moquinii) that is a candidate for use in phytoremediation of land that is disturbed due to coal bed meth-

50 hives for 50 years
Submitted by Tracy Dougher, beekeeper

This is a unique birthday request from David Baumbauer:
"Yup, the big 50 this year. Help me celebrate by sponsoring a Heifer International Beehive. Go to my Heifer International Gift Registry Page to make a donation (Go to www.heifer.org, click on 'give', then 'gift registry', search for 'David Baumbauer'). The first fifty people to sponsor a hive will get a limited edition, custom designed, not available in any stores, **BigSkyBee.com '50 for 50 t-shirt'**. Send your t-shirt size and mailing address to me at bigskybee@com. Shirts will be mailed or delivered in October."

Visiting Scientists in Strobel's lab
Dr. Sanjay K. Singh, Senior Scientist

Dr. Sanjay Singh has been working in Dr. Gary Strobel's lab for the last several months. In India, he is employed by the Agharkar Research Institute under the Department of Science and Technology.

Dr. Syed Riyaz-Ul-Hassan, also from India is employed by the Indian Institute of Integrative Medicine, Council of Scientific and Industrial Research under the Department of Science and technology.

Both Sanjay and Riyaz are here on Indian Government sponsored senior fellowships to study the biology and biochemistry of endophytic microbes in Dr Strobel's lab. The fellowship that sponsored both of

them is called the Better Opportunities for Young Scientists in Chosen Areas of Science and Technology (BOYSCAST).

Sanjay has a six month fellowship and Riyaz will be here for an entire year. The subject of their work will be the endophytic microbes from the Amazonian rainforests and samples collected in Colombia, and Ecuador. Already Sanjay has made some interesting observations on an isolate of Phomopsis that produces sabinene causing the culture to smell of peppers. The volatiles of this organism are also antibiotic and thus are of interest. Riyaz, however is keen to work on the isolation and purification of one or more antibiotics produced by these organisms. Both fellows are enjoying Montana and all of the neat and interesting things happening in Bozeman.

Montana Ag Live! Fall Schedule

9/19 Kevin Wanner, Assistant Professor of Entomology, "Update on Mountain Pine Beetle"

9/26 Vince Smith, Agricultural Economist, "Grain Marketing, key to success

10/3 Kim Falcon, Executive Vice President of the Montana Wheat and Barley Committee, "Influence of Montana's Wheat and Barley Committee on Montana's Agriculture"

10/10 John Dudley, School Safety specialist from Lincoln, NE, "School Safety Issues in Rural Montana".

10/17 Rick Mulder, Water Quality Specialist with the Montana Department of Agriculture, "Water Quality in Montana".

10/24 Myles Watts, MSU Professor of Econmics, "The impact of the lingering credit crunch on Montana's agriculture".

New Graduate Students

Aman Anand (Bill Dyer)

Hello, my name is Mr. Aman Anand. I completed my undergraduate study at Banaras Hindu University (India) a school that is among the top three largest residential universities in the world. Banaras is one of oldest continuously inhabited cities in the world and probably the oldest in India. It is situated on the bank of the Ganges River. American Writer, Mark Twain, wrote about Banaras that: "It's older than history, older than tradition, older even than legend, and looks twice as old as all of them put together".

During my undergraduate study my major was Plant Science. Currently I am working as a "Graduate Research Assistant" in Dr. William E. Dyer's lab. My research will be on: "Herbicide resistance in Wild Oat and Integrated Weed Management". I will also work at the Southern Agriculture Research Centre at Huntley under supervision of Dr. Prashant Jha in the summer. I enjoy listening to music, gardening, making friends and outdoor activities. I find the people of MSU extremely friendly and the staff is highly cooperative and that matters a lot to me.

William Chatfield-Taylor (Mike Ivie)

My name is Will Chatfield-Taylor. I graduated last fall from the University of Kansas with a B.S. in Ecology and Evolutionary Biology. I have come to Montana State University to work under Dr. Michael Ivie and earn a Masters in Entomology. My research is on the systematics of two genera of North American Buprestidae (Coleoptera); *Hesperorhipis* and the West Indian fauna of *Xenorhipis.*

I love the outdoors and spend as much time as I can out in nature. I have a passion for hiking and nature photography, and I run a nature photography website focusing on plants and insects: www.livingworldphotography.net. When I can't find time to get outside I spend a lot of time cooking and reading. I'm looking

forward to exploring Montana and all the things it has to offer while I'm here.

Frank Etzler (Mike Ivie)

Frank Etzler is a Master's Student of Entomology. He just finished his Bachelor's of Science in Biology at the State University of New York in Buffalo, where he worked with fleas and batflies. While there, he also received a B.A. in Anthropology. At MSU he will be conducting research on 'click beetles' and their larval stage, called 'wireworms'. He will be working in the labs of Dr. Ivie and Dr. Wanner. In his free time, Frank enjoys a variety of hobbies, including reading and playing the guitar and mandolin. He also enjoys hiking.

Erin Lonergan (Cathy Cripps)

I received a B.S. in botany from Humboldt State University in Northern California and have worked a variety of field jobs throughout the Pacific Northwest and the Rocky Mountains. I will be working with Dr. Cathy Cripps in the Mycology lab, studying the mycorrhizal relationships of five needle pines. In particular, I am interested in the ways mycology can be used in conservation and restoration efforts. I really enjoy the natural world and do a lot of backpacking, fishing and hunting. I am also a big fan of disc golf.

Ryan Quire (Matt Lavin)

I was born and raised in the lovely city of Frankfort, KY. I graduated in May 2009 from the University of Kentucky, with a B.S. in Natural Resource Conservation and Management. Over the past three years I have had the privilege of working at two nature preserves in Lexington, KY. At both preserves I enjoyed teaching children and adults a variety of subjects related to the natural world, and also removed multiple invasive plant species. Although I loved my job, I had the desire to experience a new place and expand my education. Fortunately, after contacting Matt Lavin, I realized we had very similar interests in regards to plant biodiversity. He was recently awarded a NSF grant for a large imaging project within the MSU herbarium and needed a graduate student to help with the imaging process. I'm so excited to be a part of the imaging project, while also obtaining my Master's degree. Bozeman is a wonderful place to live; I'm really looking forward to all the opportunities the area has to offer!

Chris Shafer (Tom Blake)

I graduated from Montana State University earning a B.S. in Biotechnology with an emphasis in microbiology and a B.A. in Spanish. My graduate program is under Tom Blake and Victoria Carollo Blake. I am investigating the development of barley straw fructanosic ethanol for on-farm biofuel production. I am very interested in biofuels and environmental biotechnology. Hopefully I will be able to apply these interests to a professional setting.

Aside from working as a graduate student I also work for Bozeman Brewing Company as an apprentice brewer. I have home brewed for over five years and have worked for the brewery for just over one year. Other interests of mine include spending as much time as possible outside in the mountains skiing, biking, or climbing.

Anna Snapp (Chaofu Lu)

Hello everyone! My name is Anna Snapp and I am from Billings, MT. I graduated this past spring from MSU with my bache-

lors in biotechnology. I am going to be working as a master's student in Chaofu Lu's lab trying to modify camelina to create hydroxy wax esters that can be a source of more environmentally friendly and renewable lubricants. In my free time I enjoy gardening, backpacking, hunting, and baking.

Mina Talajoor – Li Huang

Hello! My name is Mina Talajoor. I'm originally from Seattle, Washington. I graduated from MSU in May with a B.S. in Biological Sciences. I have been working in Li Huang's lab for a little over a year, and I'm excited to continue research as a graduate student. My research involves the relationship between wheat and a fungal pathogen that causes rust disease.

I enjoy outdoor activities in any season - hiking, fishing, skiing, etc. I also love photography and lino-printing.

Grants

Kevin Wanner, USDA National Institute of Food, "DNA Barcoding to Unlock the Puzzle of Wireworm Pest Identities in the Northern Great Plains Region"

Kevin Wanner, Rocky Mountain CESU, "Identifying Honeybee Insect Bio-Receptors For Explosive Detection"
Barry Jacobsen, Montana Dept. of Agriculture, "Development of Management Techniques"

In the News

Our recently hired Assistant Professor of Landscape Design, Jennifer Britton, was quoted in the September 1, 2010 issue of the Wall Street Journal in an article entitled, "Gardening's Final Frontier: the 'Hellstrip'.

I Need to Hear From You
By Matt Rognlie

This month I'd like to turn the tables and instead of telling you something, I want you to have the opportunity to tell me something! I'm interested in hearing from you about how information technology impacts your work here at MSU. To facilitate this, I've created a survey at <http://agnet.msu.montana.edu:20220/TechInput> for you to respond to. Feel free to answer all or only some of the questions. I'm also taking the opportunity to introduce you to "AgNet." Astute observers will see that name in the address I just shared. It is a relatively new service I've built, based on Microsoft's SharePoint technologies. It is a dedicated, but virtual, server that runs on equipment along with a number of other virtual servers. In fact, the equipment was just moved to a new data center facility in the Animal Bioscience Building.

SharePoint servers provide rich and robust group collaboration tools such as wikis, blogs, document and image sharing, discussions, and many other things. I have several sites deployed now, with some being used for search committees and others for keeping constituent groups and research teams in contact. All resources are secured with MSU domain credentials, and users can only see sites and information that they have been specifically allowed to see. If you are interested in using the service, please let me know and we can see if it fits your needs. Non-MSU employees may also have access, but a $6 per-user license is required.

I limited survey access to only PSPP users. However, the group list may be out of date so if you aren't allowed access to the survey feel free to let me know so I can update my list. Remember, when asked for your username, it is in the form of msu*username*.

Now that it is Fall
By Toby Day

Now that it is fall, many of you are spending the remaining nice weekends enjoying every last drop of warm weather to camp, hike, fish, or ride bikes, horses and even Harleys. I'm right there with you, but don't forget to spend some time in the yard and garden. A successful yard and garden begins in the fall. Below, I have made a short list of things to remember to do this fall before you pull out the skis (did I just say *skis?* Ugh!).

Make sure that you fertilize your lawn. Extension's recommendation for fall applications of lawn fertilizer is Labor Day (Sept. 6) and Columbus Day (Oct. 11). At the very least, fertilize your lawn around Labor Day with a Lawn fertilizer containing a slow release nitrogen and higher amounts of P and K.

Incorporate amendments into your garden and rototill. Amendments should be added to the vegetable garden in the fall so that they have time to break down in the spring. Most of the tilling should also be done in the fall. In both cases, don't overdo it. Most ideal garden soils only need 5-8% organic matter and overtilling can destroy the soil structure. Another hint: get your amendments soon. Many stores are already thinking of taking the amendments off the shelves and replacing them with snow shovels and dare I say it – *Christmas ornaments*.

Make sure your pesticides and liquid fertilizers don't freeze. Many pesticide lose their efficacy if they freeze. Read the label – it will tell you. It is always good to make sure they are kept from freezing anyway. A busted bottle of pesticide sure makes a big mess in the garage. I know from experience.

Mow your lawn short, put stabilizer in the mower's gas tank (or drain it – which is a pain), change the oil and sharpen the blade. Mowing your lawn short (1.5") will help keep the snow mold away and, as Jack Riesselman will tell you, "I t will let the leaves blow into your neighbor's yard." Changing the oil and sharpening the blade will put you ahead during the busy spring. Core aerating may be a good idea too if your thatch is more than ½".

Stop watering the trees (for now). If you are still watering your trees – give the water and trees a rest. Trees have grown as much as they are going to this year and are shutting down to prepare for winter. They need to harden off. Limit the water to the trees until the leaves fall off the deciduous trees. Don't put the hoses away just yet, we want to water the heck out of the trees after they are dormant – especially the evergreens.

Put tree wrap around smooth or dark bark trees. Wrapping smooth and dark bark trees will reflect the winter sun and reduce sunscald problems. You can use white latex paint. However, if you are like me, I can hardly stomach painting my house, let alone my trees.

Plant your garlic mid-September to mid-October. The stinking rose does much better in Montana if it is planted in the fall and covered with 6" of mulch (unless you know you are going to have good snow cover).

Plant your spring flowering bulbs. Tulips and other spring flowering bulbs will only flower the next year if they fulfill their chilling requirement. As a student of landscape design, I recommend not planting a bulb here and there. Only plant them in large groups. They look so much better.

Rake your leaves and set them aside for composting next year. Leaves make great compost. However, they may

need to be shredded a bit to decompose faster. I like to use my lawn mower and run over them a few times. It's not easier than buying a chipper/shredder, but it is cheaper and I like to get my aggressions out on the leaves. Besides, my neighbor's enjoy the spectacle of me mowing a big pile of leaves screaming, "S*tupid snow! Stupid snow!*"

Bring in your pots for the winter. I once lost several terracotta pots because I left them out too long. Who knew they would crack?

Cut back your perennials. If you don't think that they will have a winter interest, cut them back. How far? I use the rule of thumb (Literally). Or if you want to be scientific, about 2" – 2½".

Apply a broadleaf herbicide to the lawn. Dandelions are perennial. Many are popping up all over your yard waiting to flower next year. Don't believe me? Look close at your yard. Mine looks like the invasion of dandelions, not to mention the other perennial and winter annual weeds. Plus, fall application of weed control is more effective as Canada thistle and other hard to kill weeds will translocate the herbicide better.

Blow out your irrigation system. Hire a professional. They have the equipment and the knowhow – unless you have a high volume compressor lying around. No, the one in the garage is not big enough.

Recipe of the Month

Zucchini-Pineapple Quick Bread

3 cups sifted all-purpose flour
1 tsp. salt
1 tsp. baking soda
1/2 tsp. baking Powder
1 1/2 tsp ground cinnamon
3 large eggs
2 cups sugar
2 cups grated zucchini (1 1/2 medium zucchini)
2/3 cup canola oil
2 tsp. vanilla extract
2 (8-ounce) crushed pineapple in juice, drained
Baking spray with flour

Preheat oven to 325 degrees.

Lightly spoon flour into dry measuring cups, and level with a knife. Combine flour, salt, and next three ingredients in a large bowl, stirring well with a whisk.

Beat eggs with a mixer at medium speed until foamy. Add sugar, zucchini, oil and vanilla, beating until well blended. Add zucchini mixture to flour mixture, stirring just until moist. Fold in pineapple. Spoon batter into 2 loaf pans coated with baking spray.

Bake at 325 for 1 hour until wooden pick comes out clean. Cool 10 minutes in pan. Remove from pans to wire rack.

Make a glaze with pineapple juice and powdered sugar and drizzle over the top.

September Birthdays

Tracy Dougher	1
Irene Decker	5
Nick Reynolds	21
Gary Strobel	23
Judah Davich	23
Bill Dyer	26
Mary Young	27
David Baumbauer	27