

Plant Science Says



Happy St. Patrick's Day!

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Current Searches

Assistant Professor of Landscape Design
by John Sherwood

We have finally received permission to proceed with a search to replace the Landscape Design vacancy created with the resignation of Bill Pond. Tracy Dougher will chair the search committee, which will include Yousef Zadegan, Bill Hoch, Matt Lavin and Chris Livingston from Architecture. This will be for a tenure-track Assistant Professor. We hope to have someone on board for the start of the Fall '09 semester.

Extension Horticulture Associate Search

By Barry Jacobsen

Regarding the search for an Extension Horticulture Associate, the committee is in the process of doing reference checks on four applicants. Interviewing the top candidates will take place during the middle of March.

Giroux and Strobel Win Awards for Excellence

The MSU Alumni Association and the Bozeman Area Chamber of Commerce hosted the twenty-seventh annual Awards for Excellence Program on Tuesday, February 17, 2009. The evening, dedicated to excellence, is designed to recognize students who have outstanding records of achievement in academics (must have a 3.5 gpa or higher and senior standing), extracurricular activities and service to the University and the Bozeman community. These students are selected by the academic college Deans as the most outstanding in their colleges. Forty of MSU's top seniors were honored this year along with a mentoring faculty person, selected by each student honoree, to also receive an Award

for Excellence. The faculty Award for Excellence, in particular, has come to mean a great deal, as it is recognition directly from a student on whom they have had an incredible impact.

In our Department, Alanna Schlosser chose Mike Giroux as her mentoring faculty person. She states, "Mike Giroux is an inspirational professor and advisor. He has always made himself available for questions and guidance. He has helped me both in advising and in helping me become aware of research opportunities that I would not have otherwise been aware of. He encourages his students to grow academically and to strive for available opportunities. He genuinely wants his students to succeed both inside the classroom and out."



Dr. Mike Giroux and Alanna Schlosser

Dr. Mike Giroux commented, "Alanna is a caring, hard working person who gets along with everyone. She excels as a student while also being devoted outside the classroom. Some of her community activities include

involvement with the State FFA convention, helping local charities, volunteering at a Bozeman elementary school, and she has served as President of Pi Beta Phi sorority. She is a great student and great leader."

Raima Amin chose Dr. Gary Strobel as her mentoring faculty person. She states, "Dr. Strobel kindled my interest in research work with the potential of discovering novel medicines to fight human and plant pathogens. From the start, he has guided my research work and encouraged me to be ambitious in all my pursuits. Dr. Strobel has also helped to solidify my passion for science and also in my endeavors to help people in need."



Dr. Gary Strobel and Raima Amin

Dr. Gary Strobel commented, "Raima is quiet, unassuming and diligent. She is sincerely interested in doing her best always, and particularly in science. I'm delighted she's been recognized with this honor."

Congratulations Gary and Mike!

Jacobsen Wins Service Award

At the February 28th meeting of the American Society of Sugarbeet Technologists, it was announced that Barry Jacobsen was awarded the American Society of Sugarbeet Technologists Meritorious Service Award. This award is given for research and service to Sugarbeet Industry. Congratulations Barry!

Horticulture Students Receive Awards

The MSU Horticulture Faculty selected the following recipients for the American Society of Horticultural Sciences, Collegiate Scholars Award.

Rose Gettel
Carmen Backes
Delisa Pearson
Tara Gregorich
Chelsey Gilman

Jennifer Hart
Rhiannon Wilson

This award honors the academic achievements of junior and senior undergraduates from departments of horticulture, or of plant and crop science, who are majoring in horticulture. They are now in a select group from across the nation. Students must be in the top 15% of their class, based on academic standing. They are selected on the basis of scholarship achievements, leadership abilities, participation in campus/club activities, and services to our departments. Their names will appear in the April ASHS newsletter.



Tara Gregorich

The MSU Horticulture Faculty, in addition to selecting Tara Gregorich for the ASHS Collegiate Scholars Award, have also selected her for the ASHS Outstanding Undergraduate Horticulture Student.

The ASHS Outstanding Horticulture Student Awards officially recognize exceptional undergraduate horticulture students in baccalaureate programs. Students enrolled in horticulture (including pomology, olericulture, floriculture, and landscape or ornamental horticulture) or in a plant science/crop science department with an emphasis or major in horticulture are eligible. Tara was selected based on her academic achievements, leadership abilities, participation in campus/club activities, and service to our department. Tara's photograph and name will be published in the April issue of the ASHS Newsletter, and she will receive a certificate of achievement.

CONGRATULATIONS to all these students from the Horticulture Faculty and the PSPP Department!

Latin American Phytopathological Congress

By Barry Jacobsen

Ernesto Moya and I attended the Latin American Phytopathological Congress in Santiago, Chile, January 13-17. Ernesto presented an oral presentation, "Biological control of plant diseases by systemic acquired resistance induced by *Bacillus mycooides* isolate BmJ." and a poster "Biological control of plant diseases by systemic acquired resistance induced by *Bacillus mycooides* isolate BmJ." and I presented an invited paper "Biological control of plant diseases by systemic acquired resistance induced by *Bacillus mycooides* isolate BmJ." at the Induced Resistance Symposium. The Congress was held at The Catholic University of Chile-San Joaquín campus. The campus of ~16,000 students was beautiful and was a great place for this meeting of ~120 plant pathologists from throughout Latin America.

Following the meeting we traveled south (~120 mi) to Coltauco for a traditional maize cake barbeque with Ernesto and Vanessa's families. Travelling from Santiago we were in a large valley with extensive corn, soybean, cucurbit crop seed production and extensive fruit (grape, apple, peach, sweet cherry, kiwi fruit, pears and plum) production (our winter fruit!). I returned that evening to catch a flight to Puerto Montt (40° south latitude). Here I met my former student, Ivette Acuna (2000, Ph.D in Plant Pathology), and drove to Osorno where she lives and works.

While in Osorno, I spoke to scientists at the National Institute for Agricultural Research (INIA)-Remehue where Ivette is a scientist working on potato IPM. My seminar was entitled "Using Systemic Acquired Resistance induced by *Bacillus mycooides* isolate BmJ in Integrated Disease Management Programs". The Remehue station has 45 Ph.D. scientists covering all aspects of agriculture including animal science, plant breeding, horticulture, plant pathology, entomology, soil science, economics, etc. They have excellent facilities for both laboratory and field research. I toured the Chilean Foundation Potato farm and saw some interesting red

skinned, yellow fleshed varieties that are so popular with Chilean fresh market growers.



Dr. Ivette Acuna and her potato research plots

Their Foundation and Certified seed operations are quite different from ours with growers coming back to Foundation seed every 8-10 years. Ivette spends much of her time working on the late blight, *Rhizoctonia* and scab diseases of potato. Late blight is a common and very serious disease owing both to a favorable environment for disease development and to the carry-over of the pathogen in volunteer potatoes. While there I met with three different farmer association groups (GTT). These GTT groups are INIA- grower groups where extension education and technology transfer is facilitated for 15-20 growers of about the same farm size. The groups I spoke to had 10-50 acres, 50-150 acres and >150 acres of potatoes. The growers were most appreciative of the work INIA scientists brought to their farms and it was clear Ivette and her colleagues were having a large impact. It was particularly interesting for myself and Gary Secor (North Dakota State University-potato pathologist) to give extension talks through interpreters. I spoke on our work on scab, *Rhizoctonia* and Black dot root rot and Dr. Secor spoke on late blight. He is working on the development of late blight resistant varieties with Ivette. It was very interesting to me that many of the growers were of German extraction having immigrated to Chile in the 1850s and following WWII. I was able to use my German with several farmers.



Orsorno volcano-Llanquihue Lake

On Sunday the 18th, Ivette and her husband Juan (2000, MS, MSU-Jim Bauder) took me to the lake region with the beautiful Orsorno volcano. (no I didn't get to go fishing). Juan is working as a farm development extension specialist. The two boys we remember as 4 and 7 year olds are now university students.

The 21st Annual Insect Luncheon By Florence Dunkel

The 21st Annual Insect Luncheon was a great success. Eighty to 90 students and professors and MSU staff attended with 2



Florence Dunkel and student Alex Brinkman cooking quesadillas - sautéed meal worms are part of the filling.

seatings from 12 noon to 4pm.

The new entrees for the event Friday were mealworm quesadillas and two cricket breads, honey-yogurt cricket bread and parmesan red pepper cricket bread. All three of these were invented by

the BIOL 106 teaching assistant, Tiphani Lynn of Great Falls, Montana. We also had organic Montana grasshoppers collected from a local (my husband's and my) vegetable and fruit garden. Sautéed in butter and dipped in teriyaki sauce, these are my all time favorite--reminiscent of soft shelled crab. They turn a beautiful rose color when sautéed. These are the best. Also for hor'dourves we had cocktail wax moth larvae. They are pests in bee hives, but when boiled in salty water taste just like shrimp when served with cocktail sauce. These were the most popular among students and guests.

Back by popular demand were the mealworm brownies, a recipe invented by a student last year. We also had the standard apple cinnamon fritters as well as the traditional Chinese cricket stir-fry with rice with Chinese from the same garden that grew the

grasshoppers.



Wax moths larvae being stirred into the cinnamon apple fritter batter.

When I checked out the groceries for the event at Albertson's, the checkout person said, "Oh yes, I grew up eating beetles and moth larvae. I'm

from the Philippines." It is only the Euro-Americans that think food insect eating is unusual. More than 1200 documented species are eaten worldwide.

We are also about to send to press (in the next week) a food insects book, *The Food Insect Newsletter, Volumes 1-13: Chronicle of a Changing Culture*.

This is part of my course BIOL 106 Contemporary Issues in Science: Insects and Human Societies. There were many discussions during and after the event. One student summed it up: If you are a serious insect-eater, you don't want the insect ground up or disguised. Who wants shrimp powdered and added to bread or disguised?

You want to hold the shrimp, an insect cousin, as you pop it in your mouth. Most preferences and food aversions are learned at a young age, before you are 6 or 7. The event began with a honey tasting event to provide a familiar taste for the palates of the students and guests who are about to consume insects for the first time. During this portion of the afternoon Dave Baumbauer, manager of the Plant Growth Center and passionate bee keeper, led the honeybee and mystery of the colony collapse discussions.

For guests and students waiting to be served, we had a slide show running in the mezzanine of the Plant Growth Center, continually summarizing the whole concept of food insects worldwide. Insects worldwide are part of the bridge foods in times of famine and an important weaning food in many cultures and a culturally acceptable, and, therefore, very important way to abate kwashiorkor, a protein deficiency in children ages 5 to 10, so my "poverty course" PSPP 465R Health, Poverty, Agriculture: Concepts and Action Research was also involved in the event.

Strobel's Last Collecting and Speaking Trips of '08 – The Best Yet!

The last trips of "08" were made in mid-November to mid December. A special invitation from officials at the Biodiversity Center in Kuching Sarawak, Borneo to attend and present a report at an international meeting on biodiversity had me making my second trip to this region of the world within an 11 month period. However, the arrangement was to have special pre-meeting excursions to both Bako National Park and the orangutan center in western Sarawak. The Bako trip proved interesting since we stayed in jungle cabins that had few or no amenities. We kept our food in bags near our beds and opened the windows to let in air during the day. Suffice it to say that a local troop of macaque monkeys already possessed the technology to not only open screens on windows, but they also knew how to open tin cans and to extricate all contents. The monkeys left us nothing except a big mess and no food !! We, however, did get to see two troops of



A rare proboscis monkey in a mangrove forest in Bako National Park, Borneo.

proboscis monkeys, some silver leaf monkeys and the rarest of all jungle creatures..... a flying lemur known as a colugo. This is all not to mention several hairy nosed pigs –a real treat indeed !!



A truly fine specimen of a hairy nosed pig in Bako Natl Park, Borneo.

This area of the world is one of the most diverse in terms of its plant life. Borneo is a place having a mixture of plant families of both Asia and the South Pacific. It is also home to a plethora of Nepenthes or pitcher plants (picture on next page). In certain areas of Bako, the Nepenthes are numerous and can be tightly connected to the ground or appearing as vines attached to other plants.

The meeting in Kuching was attended by people from around the world and a great deal of emphasis was placed on biodiversity of microorganisms and their potential uses. To that end, the work done at MSU received



A Nepenthes sp. (pitcher plant) growing in a vine like fashion on a rainforest tree

a lot of attention. As a footnote, the deputy prime minister of Sarawak extended an invitation to me to have dinner at his palace on the outskirts of Kuching.

I was at home for two days in late November only to repack for a three week trip to re-collect plant specimens in Patagonia. The plan was for several of us to first spend four days in Ushuaia, Argentina and then head north to meet up with my son Scott and a group of three students from Yale the day before we were to head north. Carlos got a ring on his blackberry and learned that the hotel that we were to stay in Puerto Natales had just burned to the ground-what a bummer!! We managed to recover and then headed to Torres del Paine which is probably the best mountain country on earth. We picked up samples near the park and then went up to the area of Porto Montt. This area is moist and is loaded with plant types that are representative of central Chile. We were able to collect many plant species and then flew down to Queulat where collections were done in a private reserve owned by Patrick

Silva. Already success is at hand with this collection since some relatives of the myco diesel producing *Gliocladium* have been recovered. The Queulat area is one of the most gorgeous places on earth with glaciers, hanging valleys, deep temperate rainforests and lots of streams and rivers. This was one of our best trips ever.



Queulat Natl Park Chile close to where new isolates of myco diesel producing fungi were discovered. The glacier in a hanging valley is calving –quite a rare sight.

Publications

Gary Strobel's work on mycodiesel was published in the November, 2008 issue of *Microbiology Today* and has been the subject of hundreds of news pieces throughout the world including the March 2009 issues of *Reader's Digest*, *Ode* magazines, *der Spiegel* in Germany and many newspapers worldwide.

Microbiology Today is a quarterly publication of the Society of general Microbiology of England. The February '09 issue featured an article on Myco-diesel from Fungi along with photographs of a *Gliocladium roseum* culture as well as Dr. Strobel collecting an ulmo sample in central Chile. The majority of the volume was dedicated to the legacy of Alexander Fleming, one of the discoverers of penicillin.

Should I lime my soil in the garden this spring?

By Cheryl Moore-Gough

With gardening season just about here, many of you will be tilling your soil and adding amendments for better plant growth.



The soil pH is always high on everyone's list, but how many of you really know what the pH is all about?

Soil pH is measured on a scale of 0 to 14. 7 is neutral. The lower the number, the more hydrogen ions are present. These give

acid reactions. Numbers less than 7 indicate acid pH and those above 7 an alkaline, or basic pH. Because the acidity of the soil regulates the availability of nutrients to your plants, it's important to keep the pH adjusted to the proper range. Many nutrients are not readily available to plants at pHs below 4.5 or above 8. Most are available, say between pH 6.5 and 7.5. Soils below 6.5 need lime to bring them into the proper range for good plant growth. We don't have that problem here. Most of our soil pHs are already on the high side, so adding lime is not a good idea. Wood ashes act like like lime in raising the soil pH, so be careful you don't add too much of them to the soil. In most cases, add no more than 20 pounds of wood ash per 1000 square feet per year. Better still, don't add any if your soil pH is at or above 7.5.

Folks in South Dakota and Wyoming, as well as in Montana, share the similar problem of soil pH that is sometimes too high for best plant growth. Adding peat moss, compost, and sulfur will sometimes help to get it back down into the proper range. So check your pH with a do-it-yourself soil test kit, or have it tested by one of the many commercial labs that test soil. But try to keep it right. After all, that's what determines the availability of soil nutrients.

Bob's Byte

Shortcut keys for Use in PDF documents

Up Arrow Button - Scroll up the active document

Down Arrow button - Scroll down the active document

Ctrl+Hyphen - Use to Zoom out the active page

Ctrl+equal sign - Use to Zoom in the active page

Alt+Right Arrow button - Use to Next view

Alt+Left Arrow button - Use to previous view



Right Arrow button - Move to next page in active document

Left Arrow button - Move to back page in active document

Page Up - Move to the previous screen

Page Down - Move to the next screen

Ctrl+Shift+W - Apply to close all open windows

Ctrl+Home - Go to home page of document

Ctrl+End - Go to last page of document

Ctrl+A - Use to select the all pages

Ctrl+Shift+A - Use to deselect the all pages

Enter - Scroll down the pages

Ctrl+0 - Use to adjust the document

Ctrl+1 - Use to view actual document size

Ctrl+Q - Quit the active document

Ctrl+L - To view the document in full view

Ctrl+Shift++ - Move the page clockwise

Ctrl+Shift+ - Move the page counter clockwise

Recipe of the Month

Frosted Date Orange Bars

$\frac{3}{4}$ cup sugar

$\frac{1}{2}$ c butter, softened

$\frac{1}{2}$ c water

1 8 oz package chopped pitted dates

1 $\frac{1}{4}$ c flour

$\frac{3}{4}$ t baking soda

$\frac{1}{4}$ t salt

$\frac{1}{4}$ c orange juice

$\frac{3}{4}$ c milk

2 eggs

1 T orange zest

1 c chopped pecans



Frosting:

3 c powdered sugar

$\frac{1}{3}$ c butter, softened

1 - 3 oz package cream cheese, softened

1 T orange zest

2 $\frac{1}{2}$ T orange juice

Preheat oven to 350. Grease a 10x15 inch jellyroll pan. In a small saucepan over medium heat, combine sugar, 1/2 cup butter, water and dates. Cook, stirring frequently until dates have softened and the mixture is well blended. Remove from heat.

Combine the flour, baking soda and salt; stir into the date mixture, then mix in the 1/4 cup orange juice, milk, eggs and 1

tablespoon orange zest. Spread the batter evenly into the prepared pan.

Bake for 15 to 20 minutes in the preheated oven, until a toothpick inserted into the center comes out clean. To make the frosting, combine the confectioners' sugar, 1/3 cup butter, cream cheese and orange zest. Beat until smooth. Gradually mix in the remaining orange juice a tablespoon at a time until the icing is spreadable. Spread over the bars when cool. Cut into squares.

March Birthdays

Mary Brennan Lollis	1
Eva Grimme	9
Dai Ito	11
Yousef Zadehan	17
Tamara Vook	24
Vicki Blake	28
Elaine Nichols	31

