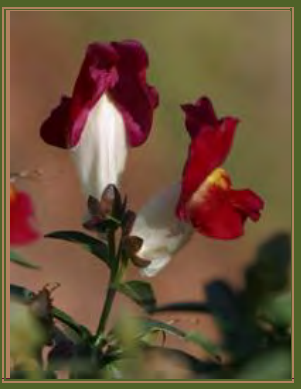
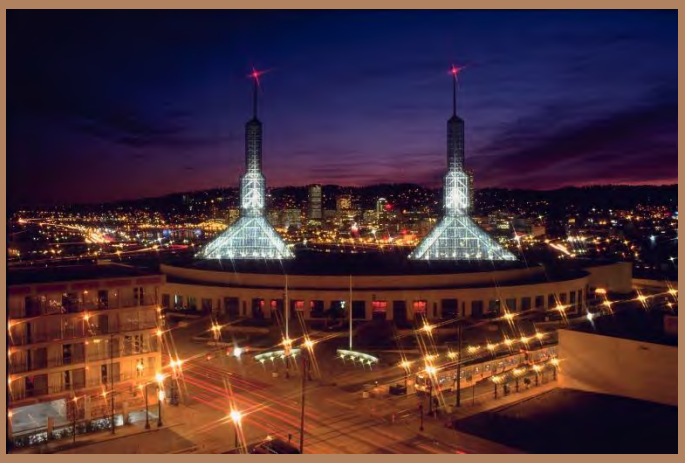
Plant Science Says



Vol. 12, Number 8 September, 2009

APS Annual Meeting: *Expanding the Boundaries*
by Jackie Campbell

The 2009 American Phytopathological Society annual meeting was held in Portland, OR August 1st-5th. The most environmentally-friendly city in the United States was an ideal setting for plant pathology discussions in the current global atmosphere of agricultural and ecological concern as highlighted by the plenary session Achieving Scientific Excellence in a Changing Environment.



Portland Convention Center

The breadth of research covered in the meetings lived up to the Expanding the Boundaries mission statement. Basic and applied research was presented on topics across the spectrum of plant pathology. The meeting was attended by several research groups from the MSU Plant Sciences and Plant Pathology department. Professors Li Huang, Alan Dyer, and Barry Jacobson were in attendance. Barry Jacobson's group presented one poster authored by Mary Brennan Lollis entitled, "Influence of glyphosate on Fusarium wilt, Cercospora leaf spot, and Rhizoctonia root and crown rot diseases of sugar beets" and an oral technical presentation by Ernesto Moya entitled "Determining distribution and prevalence of Fusarium crown rot and common root rot in Montana wheat using real-time qPCR". Mary Burrows' research group presented one poster authored and presented by Dai Ito entitled, "Quantitative analysis of susceptibility to wheat streak mosaic virus among alternate hosts and winter wheat varieties in the Great Plains". These presentations were part of four days of technical sessions and over 650 posters that were presented.

The meeting ended with the final night celebration where meeting participants enjoyed dinner, dancing, and a final opportunity to meet with new and old contacts.

Eva Grimme, Oliver Neher, Hope Talbert, Jackie Campbell, and Mary Brennan Lollis at the final night celebration.

Following are personal highlight shared by the graduate students in attendance.

Mary Brennan Lollis:
I had a lot of fun! It is a lot easier to take in so much information and so many intelligent

conversations and talks when my mind is not preoccupied with a million things on my to-do list or other details of my specific project. It was not at all like the three day intense course I was imagining. It really helped me to get out of my tiny research bubble, talk to peers that were dealing with similar problems and (small) victories, and talk with other people working on similar projects to mine. Attending the talks was also great; ideas could flow freely without the restriction of what directly pertains to MY current thinking on MY project and my mind was more open than ever. The exhibits were nice also, as well as the Graduate Student – Industry Lunch, which both gave me a much better idea of what kind of job opportunities and options are out there, as well as services that I was not exactly aware of. All in all, I got an inspiring reminder of how amazing and important plant pathology is and how many exciting ways I am/can be a part of it.

Ernesto Moya:
This adventure started with a long trip of 12 hours from Bozeman to Portland with Dai Ito, Mary Lollis, my wife Vanessa, and I. It was interesting to observe the agricultural systems and crops grown along the road in Washington and Oregon. Particularly interesting for me was sprinkler irrigation of a vineyard, because I always thought the drop irrigation method was the best method water grapes. Obviously, with three pathologists in the van we started to discuss the possible diseases associated with the use of the sprinkler method of irrigation - gray mold attacks, more susceptibility to powdery mildew, sour rot problems, etc.

During the meeting, I really liked the plenary session with William S. Niebur, Vice-President of Dupont Crop Genetics and Development. This presentation was thought-provoking because it gave an interesting view of the future of genetics and the role of plant pathologists in the future. It was interesting to reflect on the breeding programs of the future that would need to consider the integration of different technologies to develop new cultivars and varieties. Breeders in the future will need to consider the integration of molecular information, field test results, and large computer data sets to develop the cultivars and varieties of the future. Also, breeders need to integrate traditional breeding and transgenic technology. After this talk, U saw that future plant pathologists will face a challenging future. Moreover, it was a great surprise to know that Mr. Niebur is a former MSU student. He showed me that the only tools required for being a successful professional is our hard work and abilities. The conclusion of this plenary session for me is to consider in my professional future two words: "Innovation and flexibility". These words are going to be the most important tools in a changing environment.

This year I decided to learn about the work option in the private industry. I noted that there are several opportunities in the agro-industry to be involved in agribusiness or R&D programs. It was interesting to discover that those programs are worldwide and have internship opportunities available for graduate students entering the market.

This meeting in Portland was the first opportunity I have had to give an oral presentation of my research at this level. I felt very nervous prior to giving the speech, but it was a good experience and I received good comments about my work, which is always a good incentive to continue doing good science. Moreover, it was interesting to have the opportunity to interact with students from other universities who are doing similar research.

The APS meeting was a good opportunity to meet old friends from my country and to meet the new generation of Chilean's phytopathologists.

Dai Ito:
I enjoyed the Graduate Student – Industry Lunch, where participating students had the opportunity to meet and talk with members of the plant research, agricultural, and Biotech industries. The industry participants represented both large and small U.S. and international companies. I am not a U.S. citizen and this was a great opportunity for me because I met representatives from Japanese companies like Mitsui Kagaku.

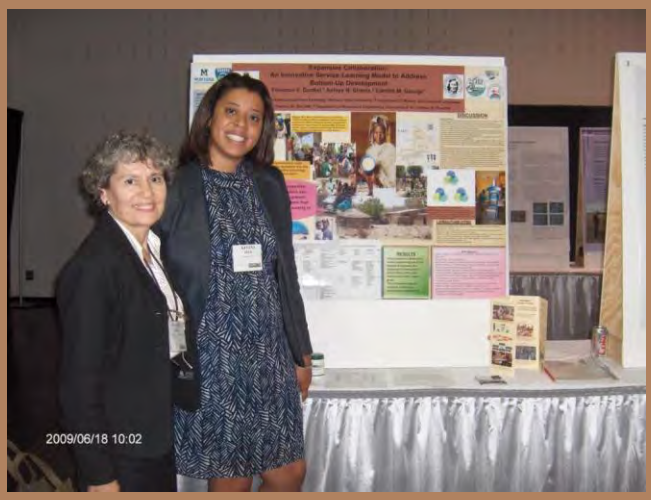
Jackie Campbell:
The most impressive part of the meeting for me was the Mechanisms of Post-Transcriptional Control of Gene Functions in Plant-Microbe Interactions special session. This session was comprised of talks about the roles of alternative-splicing, protein decoration, and RNAi in innate and acquired disease resistance. The role of alternative splicing in conditional gene expression regulation is an intriguing addition to the post-transcriptional responses to stress. It seems clear from the session that the more plant genome and sequence converge that is obtained the more evident post-transcriptional regulation is.

Three PSPP Faculty Attend Joint Meeting of NACTA and SERD, Oklahoma State University
by Florence Dunkel

Tracy Dougher, Bill Hoch, and Florence Dunkel attended the 2009 NACTA SERD conference 17-19 June. For its 55th annual conference, NACTA (North American Colleges and Teachers of Agriculture) joined forces with the USDA-CSREES-Science Education Resource Development Unit (SERD) required conference for principal investigators to allow participants to learn from most educational researchers recently funded by SERD. These included Higher Education Challenge grants and grants to community colleges and minority institutions. Additionally, the North Central and Southern Regions of the Association of Public and Land-grant Universities (APLU) partnered with NACTA and SERD to make the 2009 Conference their annual educational workshop highlighting the expertise of educators who have won their prestigious teaching awards. So, it was supposed to be the premier conference for agriculture and natural resource educators in North America. Tracy, Bill, and Florence agreed that it was inspiring and very useful for teaching evaluation ideas and just for networking.

Dunkel presented the poster "Expansive Collaboration: An Innovative Service-Learning Model to Address Bottom-Up Development." She coauthored the poster with her two colleagues, Camille George and Ashley Shams at University of St. Thomas-St. Paul MN, one of 6 partner schools in the Higher Education Challenge grant for which Dunkel is the P.I. The poster is available at http://www.montana.edu/mali/ppts/3mposter200916june.ppt

Tracy Dougher meets Dunkel's USDA CSREES program officer, Gregory Smith, interim director of SERD at the conference banquet at the Cowboy Museum in Oklahoma City.



Dunkel presents poster and connects Virginia Tech faculty present at NACTA-SERD conference with other faculty at her project's partner institution Virginia Tech.

Mechanical Engineering Professor Takes Micro-Sabbatical with Montana Seed Potato Lab/Farmers
By Florence Dunkel

Dr. Camille George is an Associate Professor of Mechanical Engineering in the College of Engineering, University of St. Thomas, St. Paul, MN. She and her colleagues in the School of Business, Department of Sociology and Criminal Justice, and the Department of Modern and Classical Languages are working with PSPP graduate, Aissata Thera, in Mali to help realize her dream of a Mali-based certified, disease-free seed potato program in Malian villages. George, with her

undergraduates in their senior design project course 2009-2010, is in charge of designing and testing storage structure and cooling system designs for progeny of 80,000 seed potatoes produced by former PSPP student, Adama Berthe. George is learning all she can as fast as possible about seed potato certification, production, and storage requirements. Nina Zidack and Barry Jacobsen, as well as technician Elaine Nichols, Florence Dunkel, and former PSPP grad student, Jack Meyers, and the Dan Kimm family (seed potato farmers in Churchill, MT) have been most helpful. Funding for this "expansive collaboration" (term coined by George, Dunkel, and French professor, Ashley Shams, at University of St. Thomas, for a type of service learning) is from the USDA CSREES Higher Education Challenge Grant program (F. Dunkel, P.I.). George, with her students and colleagues and their students will travel to Mali January 2010 to work in the village of Borko with Aissata and Adama.

From left: Camille George, Mechanical Engineering Professor University of St. Thomas, Nina Zidack, Director of the Montana Seed Potato Laboratory, and Florence Dunkel, PSPP.

Here's the Buzz on Bees
By Joanna Gress

This summer has been a whirlwind of activity in the Wanner Lab as we have set out to establish eight new honeybee colonies at MSU. We currently have five hives at the Post farm and three at the Hort farm. These hives are crucial to the success of our research on *Nosema ceranae*, a major factor in Colony Collapse Disorder. It was great fun going up to Polson and bringing back bees to establish our new hives, though it was slightly daunting carrying that many lives bees back in the truck. Installing the bees was a hoot but I was worried that our hives wouldn't make it when we had that late frost in May. However, all hives are now thriving and making honey, which we should be harvesting in a few weeks.

Joanna installing bees into the hive

Throughout all of this, I have only been stung 7 times, which is not bad when dealing with almost 500,000 bees.

Honeybees are a crucial part of agriculture. They do much more than just make honey; over one third of the U.S. diet depends on honeybee pollination. Honeybees provide 80% of pollination for vegetable, fruit, seed and flower crops. The almond crop in California alone requires 1.3 million of the 2.4 million beehives available in the U.S. (so thank a bee every time you eat an almond). In 2006, Montana provided 10% of the bees for the California almond pollination. Bees also pollinate forage crops fed to dairy and meat animals. In this way, they add at least $15 billion to the value of more than 130 U.S. crops.

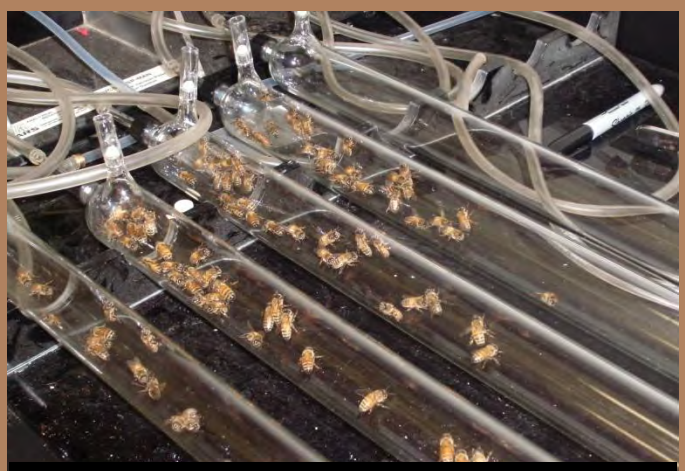
However, as you have all heard, honeybee health is in danger due to Colony Collapse Disorder, which cost U.S. beekeepers up to 45% of their bees in 2006-7. The global appearance of CCD appears to correspond with the infection of the European honey bee by the pathogen *Nosema ceranae*. *N. ceranae* is a microsporidia pathogen that has recently expanded its host range, jumping from the Asian honeybee, to the worldwide honey producer, *Apis mellifera* (European honey bee). *N. ceranae* is very pathogenic and infection has been associated with a syndrome of gradual depopulation, colony death during the winter, and poor honey production. The risk of colony depopulation is six times higher in colonies infected with

N. ceranae than in uninfected colonies but exactly how and why *Nosema* is so lethal remains in question.

Newly emerged bees from a hive frame for use in Nosema experiments; they cannot fly or sting for the first few days.

We have been collecting newly emerged bees (as they are disease-free) from hive frames for use in both *Nosema* infection experiments and in volatile collection. In CCD colonies, it has been reported that healthy bees do not rob the collapsed hives of honey, even though this is a free food source for them. Additionally, bee keepers have reported that pests of bee hives also avoid CCD colonies. I am currently running volatile collection experiments in the Weaver lab to determine if bees infected with *Nosema ceranae* produce any compounds related to the disease. Additionally in conjunction with the Cramer lab in VMB, we are running a series of experiments on bees infected with *Nosema ceranae* to determine why *N. ceranae* is so lethal. Peggy Lehmann (Cramer Lab) and I have been individually feeding bees *Nosema* spores, a time consuming but interesting process. To do this we collect new bees from the hive frame we are storing at 33C and put them into pint size ice paper ice cream containers, in groups of 30. So if you see me walking through the PGC with paper containers, I am not having a snack but am transporting bees. We then cool the bees on ice and individually infect them by sticking them up through a 1mL pipettor tip and force feed them spores in sugar water. We have only had a few escapees and I am becoming an expert bee wrangler. We hope that these experiments produce some interesting data that can tell us more on *Nosema*, CCD and its causes. We are currently in a race against time as we have to close our hives up for the winter, so we are trying to run as many experiments as possible so we can get as much data as possible before the cold takes over.

Force feeding a bee Nosema spore in sugar water, once the bees have been knocked out on ice, the proboscis extends and they will drink the sugar water.



Bees in the volatile collection system

I would like to give a special thanks to the Cramer lab, especially Peggy Lehmann for all her help with the hives and infection. I would also like to thank the Weaver lab for generous use of the volatile collection system and GC-MS. Also thanks to David Baumbauer for his bee expertise, Bob Brekke for use of the Hort farm field and Bernie for use of space at the Post farm.

My Summer in Kenya
By Erin Chamberlin (A. Dyer Lab)

This summer, I had the opportunity to spend a month in Kenya encompassing two very different purposes. The first two weeks of my trip were spent in Nairobi as a representative of the MSU School of Architecture. Professor David Fortin, and another student, Michael Spencer and myself were under the guidance of local Kenyan architect Ronald Omyonga working

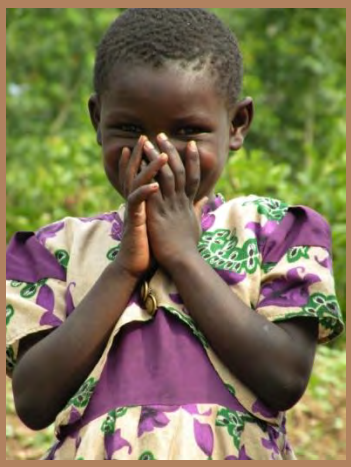
on a pilot project in Kibera, Africa's largest slum. Through our architectural studio courses beginning this fall, our goal is ultimately to achieve a sustainable housing solution which will improve the conditions for Kibera, but also for the other 200 slums (70% of the population) in and around Nairobi. While in Nairobi, our team completed all of the ground work and research necessary by making contacts, researching possible funding, visiting construction sites, making an effort to understand the culture behind the people of Kenya, and spending time in the slums.

I experienced two very different sides to Kibera as David, Michael, and I were guided through the alleys between densely packed tin shacks, straddling rivers of sewage. The obvious is the emotional unrest when you fully allow yourself to be immersed in the poverty of someone's life. The weight that I feel in my heart every time I recall the sights and smells of that visit is one which never showed on the faces of the people we passed throughout Kibera. They are impoverished to the point of not knowing where their next meal is coming from, or if they can afford to pay rent on their tin shack. There is very little opportunity to think beyond immediate needs. The second side that I have become aware of is the complete rationale behind

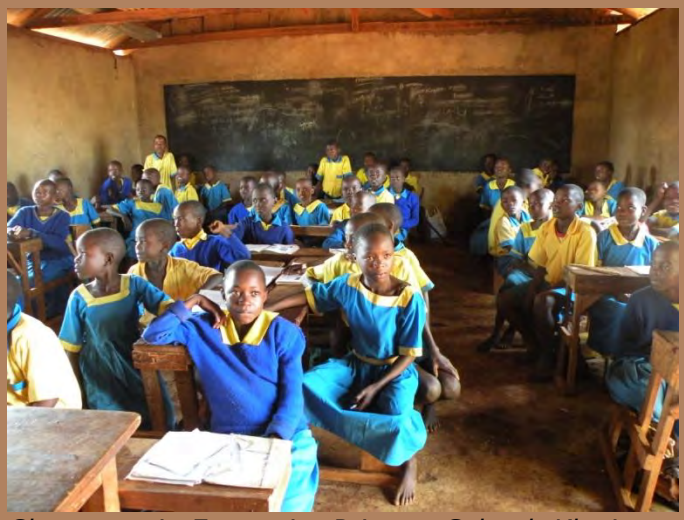
Gathering water in Nairobi's Mathari (another slum the team visited)

the formation of the slums. There are logical and basic causes and equally logical answers or possible solutions. It just so happens that these people lack the ability to implement; to be the forces behind the change themselves. They lack the economic resources, but also the advantage of an exterior perspective of the issue.

The second two weeks of my trip, I moved to rural Khwisero, an 8 hour bus ride to the Western Province. I went as a member of Engineers Without Borders (EWB), our campus chapter that has been working in Khwisero on water, sanitation, and other individual issues. EWB has targeted the 58 primary schools of Khwisero (a small district with about 115,000 people) to be the sites for boreholes and bio-gas latrines. While in Khwisero, students are hosted by local school board



Girl in Khwisero



Classroom in Emwaniro Primary School, Khwisero, Kenya

members, and experience a life of mud-walled huts, no electricity, pit latrines, bucket showers, and local cuisine. I was able to be absorbed more deeply into the culture and history of these Kenyans, the Luhya. This opportunity allowed me perspective; being one of the places from which people leave for the cities in hopes of trading a subsistence farm for an industrial job.

Again, the realities of a life in Khwisero are devastating to say the least. Children far outnumber adults for reasons of illness, parental abandonment, and choices forced out of poverty. To a point, people are open about their home life and about their personal trials, so open as to make you wonder what they hope to gain by sharing. They live in the moment, not as a luxury but out of necessity; operating every morning they wake up in a way which will provide the best for their families. This sense of the immediate is difficult to adjust to coming from a society of long term goals and future tenses. Further, it is most frustrating to go about a solution for the future by drilling wells and providing water, when what would most help the person holding out their hand is a few shillings to buy a meal. My time in Khwisero was thought provoking on a personal level but also of human nature and the connections across cultural boundaries. The roots of Kibera are scattered throughout Kenya, in rural villages like Khwisero, and they play a huge role in being the source of an impoverished melting pot. There is a dichotomy between these people, all wholly proud to be Kenyan, but each having a very different existence.

I really could go on for days both about my time in Nairobi and in Khwisero. The two give meaning to each other, and there is a relationship that I am still exploring and coming to understand as I now have time to reflect about my interactions. My work in both of these areas will continue throughout the school year, and I hope very much to return next summer with some possible solutions for Kenya. The blog that Team Kenya kept throughout the last month may be found at www.teamkenya.wordpress.com if you would like more details from our trip.

New Employees

Robert Antibus (Cathy Cripps)

Bob Antibus will be spending his sabbatical l eave for the 2009-2010 academic year working in the lab of Dr. Cathy Cripps. Dr. Antibus hopes to mesh his interests in the ecology of ectomycorrhizal fungi with Cathy's work on high elevation whitebark and limber pines here in Montana. Bob is a biology professor and former chair of the Science Department at Bluffton University. Bluffton is a small liberal arts college in northwestern Ohio of approximately 1000 students. Founded in 1899 the college is affiliated with the Mennonite Church USA.

Bob is a native of Akron, Ohio and grew up in an era when Akron was a leading tire manufacturing center. After high school Bob earned a bachelor's degree in botany at Kent State University. Undecided about direction after graduation he attended a summer session at the Flathead Lake Biological Station where he took mycology from Orson Miller. He returned to Kent State to obtain his master's in mycology then moved on to Virginia Tech for his Ph.D. His doctoral work focused on ecology and biochemistry of willow-associated ectomycorrhizal fungi at Point Barrow, Alaska. Orson Miller and Arthur Linkins served as Bob's coadvisors. In 1981 Bob moved to Missoula as a faculty member in the Botany Department at the University of Montana. There he taught mycology, forest pathology, and botany and plant physiology. In 1986 he moved to Clarkson University in Potsdam, New York and in 1993 to Bluffton. At Bluffton he teaches, ecology, botany and microbiology. Over his career Bob has studied mycorrhizae in Ohio, Alaska, Montana, Virginia, New York, Costa Rica and England.

Bob is married to Joanne Vinopal Antibus. Joanne is a science teacher at Bluffton High School and holds a degree in botany from Kent State and a master's in mycology with Orson Miller. Joanne's studies centered on macrofungi found in prescribed burns at Tall Timbers, Florida. Joanne and Bob both enjoy being outdoors, gardening, winter sports and travel. They have two adult children. Doug was born in Montana and is an avid fly fisherman.

He is completing a master's in microbiology from Kent State and will start work with the USDA in Peoria, Illinois this month. Wendy has a background in archaeology and is an avid photographer. She works in the ski industry and with disabled sports in Truckee, California.

Melissa Graves (Plant Disease Clinic)

The Schutter Diagnostic Lab has a new team of diagnosticians to handle plant disease, insect, and plant identification. As part of this team, Melissa Graves will handle plant and weed identification for the Montana State University Extension Service. Additionally, she will assist with herbicide injury diagnosis and recommendations. Her background with plants includes several years experience in plant identification for the Murray State University Herbarium. She has done research requiring plant identification for projects with the University of Kentucky, Murray State University, and the U.S. Forest Service. Her educational background includes a Master of Science (Agriculture) and a Bachelor of Independent Studies (Natural Science-Botany and Wildlife Biology). She hopes to pursue a doctorate in plant sciences.

Melissa relocated from Murray, Kentucky to Bozeman, Montana in May of 2009. She has three children; Aimee, Nathan, and Roger. She is married to Gary Medley of Mayfield, Kentucky. Some of her outside interests include reading, sewing, drawing, fishing, and hunting.

For assistance with plant identification or herbicide injury, samples should be sent to the Schutter Diagnostic Lab, Montana State University, Bozeman. Additional questions may be directed to either melissa.graves@montana.edu or 406-994-5690.

Aracely Ospina Lopez (Wanner)

I am Aracely Ospina and I am from a small town close to Cali in the Valle del Cauca, Palmira. I have one older sister and two

younger brothers. After I finished school in my home town, I attended the Universidad Antonio Nariño where I received my bachelor's degree in Computer Science. During that time, I was also working as a secretary at a small private school. From 1993 to 2004, I worked at the International Center for Tropical Agriculture (CIAT), in the program of Soil and Plant Nutrition where my responsibilities included identifying aluminum resistant common bean genotypes using a hydroponic screening method, evaluating elongation of the primary root and the root morphology of bean and grasses genotypes and growing beans and grass utilizing hydroponic methodology. After that, I moved to the Genetic Resources Program where my responsibilities were to perform upgrades and modifications to Oracle and Access databases of the bean collection, provide detailed information and reports of the bean collection and capture and edit digital photographs. After I married Anuar, we moved to the United States in 2004 with our two older daughters Diana and Nathalia and two and a half years ago our youngest daughter Isabella was born. During our first year living in United States I took different English classes, because I didn't speak any English when we came here. After that, I started working at NYSAES in different programs as a seasonal worker. The last three years I worked as a technician in the laboratory of plant virology with Dr. Marc Fuchs. There my responsibilities included: PCR-based analysis, ELISA based sample analysis, performing routine genetic analysis of samples in accordance with established protocols including RT-PCR and sequencing, laboratory support as we processed high volumes of samples for plum pox survey and basic greenhouse and field work. Right now I am working with Dr. Kevin Wanner as a technician in PSPP.

New Graduate Student
Anuar Morales (Wanner)

I am Anuar Morales Rodríguez and I was born in Bogotá, D.C., Colombia. I am the

eldest of three siblings. After graduation in 1985 from the Instituto Nacional de Educación Media Dersificada, INEM Santiago Pérez El Tunal-Bogotá, I attended the Universidad Distrital Francisco José de Caldas in Bogotá, and received my B.S. in Biology with a major in Education in 1995. My undergraduate thesis was in biological control of the coffee berry borer (Coleoptera: Scolytidae) using entomopathogenic fungus Beauveria bassiana. Before and after my graduation from the university, I worked with different agrochemical companies in Colombia until 1995. From 1995 to 2004, I worked at the International Center for Tropical Agriculture (CIAT), Colombia in the beans, forage and IPM entomology programs. From 2000 to 2001, I attended the Universidad del Valle in Cali, Colombia to obtain a "Specialization in Entomology." I moved to the United States in 2004 as a Visiting Scholar in the Department of Entomology at the New York State Agricultural Experimental Station (NYSAES) of Cornell University in Geneva, NY. In 2006, I was accepted into the graduate program (M.S.) in the Field of Entomology at Cornell University, and conducted my work at the NYSAES. I was working in the Soil Insect and Turfgrass Entomology Laboratory. My research was on biological control of white grubs such as European Chafer (EC), Japanese Beetle (JB), Oriental Beetle (OB), and Asiatic Garden Beetle (AGB). These species are the most important pests of turfgrass on golf courses, parks, and home lands in the Northeast United States. I focused on identifying interactions between two neonicotinoid insecticides with three different groups of entomopathogens: bacteria, fungi, and nematodes for a curative control of these insect pests. My goal through this research was to offer a biologically-based alternative to the curative control of white grubs in turfgrass systems. This new alternative of control will reduce our dependency on chemical insecticides and may be used as a model in other agricultural systems. My wife's name is Aracely and we have three daughters Diana (16), Nathalia (13) and Isabella (2). I love to spend time with my family and enjoy cooking Colombian food.

Grants

PI Rand Swanson, MSU subcontract K. Repasky, R. Lawrence, S. Powell, T. Dougher, L. Dobeck, and K. Gullickson, STTR Phase II Proposal for Dept. of Energy, "Hyperspectral Sensor for Large-Area Monitoring of Carbon Dioxide Reservoirs and Pipelines".

Answers to Your Horticulture Questions
By Toby Day
Garlic

There's a famous restaurant in San Francisco called the Stinking Rose that is devoted to the culinary genius of garlic. Everything on the menu is made with garlic including, I'm not making this up, the ice cream. I was so intrigued that a few years back, I visited the restaurant with my wife and some friends that live in the area.

We really enjoyed garlic mashed potatoes, garlic shrimp, garlic crab, garlic bread and of course – garlic ice cream, which actually tastes better than it sounds. Later, on the subway ride home, it was very apparent that none of us could sit next to one another because of the garlic stench that permeated our pores. It was so bad that it caused the other passengers of the train to move to the next train car.

The stench that was drifting from one to another, along with the after affect of the many beers used to wash down our culinary delight, the discussion led to the theory that garlic repels vampires. There are many theories as to why garlic repels the vampire, but nothing was more compelling than the horrible smell of my dinner mates. Actually, most theories as to why garlic repels

vampires are garlic's general association with health and life and its early association with blood. Whatever the reason, garlic is still thought to ward off blood suckers – or so we thought.

Although ridiculous, a research project from a University in Norway by H. Sandvik and A. Baerheim showed that leaches (known bloodsuckers) actually were attracted and attached themselves faster to skin that was smeared with garlic to those that were clean. Two thirds of the time the leaches preferred the garlic soaked hand and attached themselves three times faster than the control. The question on my mind is whether this proves anything, unless you actually think leaches are in fact – vampires.

Regardless of all lore, garlic has been gaining popularity as a garden plant in Montana. Related to onions and leeks, the garlic plant is fairly easy to grow. Garlic grows well in fertile, friable, well-drained soil that contains high organic matter. In many areas of the U.S., garlic is planted early in the spring. However, because of our short growing season, garlic is planted in the fall from mid-September to mid-October and over-winter until spring.

Plant large cloves right-side up in a partial-sun to sunny locations at a depth of about 1 to 2 inches deep and plant them at least 5" apart. You may want to cover the garlic with a several inches of straw or mulch to protect the bulb form winter desiccation. In the spring when the garlic begins to grow, water regularly and make sure that they have receive a fair amount of fertilizer.

There are three kinds of garlic – softneck, stiffnecked and elephant. Each kind of garlic has several cultivars that work well in our area. Refer to the "Growing Garlic in Montana" MontGuide at http://msuextension.org/publications/YardandGarden/MT199904AG.pdf for more information about growing garlic and successful cultivars for Montana.

Bob's Byte
By Bob Johnston
Student Email

As of July 1, 2009, the student Luminis email server was turned off. All student email is now being processed by a Google hosted solution with a separate email domain for each campus. Mail currently being sent to myportal.montana.edu is being routed to your Google email account.

Forwarding of email was a service provided within the Luminis email system. The forwarding service in Luminis was implemented because of issues and limitations with the Luminis email. Forwarding of email is also available within the Google hosted solution. However, the user created forward in Luminis mail was not propagated out to the Google host. **Therefore, students who had forwards in Luminis are now having "...@myportal.montana.edu" email delivered to the Google host and not to the forward they created in Luminis.**

All students now have an email address associated with the campus where they are enrolled. A separate email domain was created for each campus. For any student taking courses on more than one campus, they will have an email account within each email domain. There are tools on Google for consolidating these mailboxes.

Recipe of the Month

Black Bean and Couscous Salad

1 c uncooked couscous
1 ¼ c chicken broth
3 T extra virgin olive oil
2 T fresh lime juice
1 t red wine vinegar
½ t cumin
8 green onions, chopped
1 red bell pepper, seeded and chopped
1 c frozen corn kernels thawed
2 (15 oz) cans black beans, drained
Salt and pepper to taste

Bring chicken broth to a boil in a two quart or larger sauce pan and stir in the couscous. Cover the pot and remove from heat. Let stand for five minutes.

In a large bowl, whisk together the olive oil, lime juice, vinegar and cumin. Add green

onions, red pepper, cilantro, corn and beans and toss to coat.

Fluff the couscous well, breaking up any chunks. Add to the bowl with the vegetables and mix well. Season with salt and pepper to taste and serve at once or refrigerate until ready to serve.

September Birthdays

Tracy Dougher	1
Irene Decker	5
Nick Reynolds	21
Gary Strobel	23
Brekke Peterson	23
Mary Bateson	24
Bill Dyer	26
Mark Young	27
David Baumbauer	27