

# *Plant Science Says*



Volume 15, No. 4

May, 2012

## **PSPP Graduation Ceremony**

The PSPP Department will be having its annual graduation ceremony and reception for graduating undergraduates and graduates on May 4, 2012, from 3:00 to 5:00 p.m. in 108 PBB. Those receiving Teaching Awards and Outstanding Student Awards will also be recognized.

## **VanWieren Joins Faculty**



We are pleased to announce that Rebekah VanWieren has accepted the position of Assistant Professor of Landscape Design. She will begin her duties on January 1, 2013.

Rebekah's shares her thoughts on her new position in the following paragraphs.

"This year I have been an Adjunct Faculty member in PSPP, teaching "Environmental Planning & Design: issues and concepts" in the fall and "Urban Design Studio" this spring, both within the Landscape Design option. After having worked with such a renowned and welcoming group of students, colleagues, and staff over the course of my first year at MSU and in Bozeman, I could not be more thrilled about joining the department next year as an Assistant Professor! I will be teaching courses within the Landscape Design option, including the introductory hand graphics, site engineering, and senior design studio courses.

I moved to Bozeman last summer from Ann Arbor, Michigan where I was working for Conservation Design Forum, an ecological design firm that is a leader in green technologies. I received my Masters of Landscape Architecture and Masters of Natural Resource Planning at the University

of Michigan's School of Natural Resources and Environment. My research focuses on brownfield redevelopment, green technologies for stormwater management, and landscape ecology in the context of shrinking cities.

This month my husband, Brent Rosso (College of Business), and our 2 ½ -year old daughter, Penelope, traveled back to the University of Michigan for Brent's Ph.D. commencement. Although it was exciting to return to Ann Arbor, we could not wait to get home to Bozeman! We love our new hometown of Bozeman, and we feel very fortunate to be part of such a wonderful community at MSU."

## **Burrows and Hoch Awarded Promotion and Tenure**



Mary Burrows and Bill Hoch were recently granted promotion to Associate Professor with tenure. Bill and Mary were both hired in August, 2006. Bill teaches Woody Ornamentals, Advanced Plant Propagation, and Senior Capstone I and II. Mary is an Extension Plant Pathology Specialist and Director of the MSU Urban IPM

Program and the Schutter Plant Diagnostic Laboratory. Congratulations Bill and Mary!

## **Michelle Flenniken joins PSPP**

Michelle Flenniken will join PSPP as an Assistant Research Professor in June, 2012. Research in the Flenniken Lab is aimed at elucidating the molecular mechanisms



underlying host-pathogen interactions in agriculturally important systems; including honey bees (*Apis mellifera*). Projects in the lab focus on

three principal aspects of honey bee biology: (1) determining the mechanisms and contributions of RNA-triggered pathways in honey bee antiviral defense, (2) honey bee pathogen monitoring, detection and discovery with an emphasis on candidate etiologic agents of Colony Collapse Disorder, and (3) investigating the pathogenesis of the recently discovered Lake Sinai viruses.

Michelle initiated honey bee research as a postdoctoral fellow at the University of California, San Francisco where she worked with Raul Andino and in collaboration with Joe DeRisi. She obtained her Ph.D. here at Montana State University working with Mark Young and Trevor Douglas.

Michelle is looking forward to being back in Bozeman. In addition to research, Michelle enjoys running, hiking and traveling. She is looking forward to interacting and working with members of the department. Her lab is 337 PBB and her office will be in 215 PBB; please feel free to stop by and introduce yourself anytime.

### **Bob Gough Honored at Library Reception**

The following is part of an article about Bob Gough that was in the program for the MSU Library Reception:

“This afternoon, we also recognize a distinguished member of the MSU community who is no longer with us. Dr. Robert “Bob” Gough, Cheryl Moore-Gough’s co-author and husband, passed away in September, 2011.

He became known as simply “Dr. Bob” and shared his pursuit of knowledge with countless Montanans through his articles,

books, radio shows, appearance on Montana Ag Live! And in master Gardener classes. Dr. Bob was an asset to MSU and Montana, and the Friends of MSU Library are honored to recognize him today.”

In honor of Dr. Bob, the College of Agriculture has initiated an effort to endow a scholarship that will benefit future horticulture students: The Robert E. Gough “Dr. Bob” Gough Memorial scholarship. If you are interested in making a donation toward the scholarship in honor of Dr. Bob, please contact the College of Agriculture's Development Director, Darin Paine, at 406-994-7671.

### **The 5th International Wheat Stem Sawfly Conference**

**By Joanna Gress**



The 5<sup>th</sup> International Wheat Stem Sawfly Conference was held here at MSU in the Procrastinator Theater April 3<sup>rd</sup> and 4<sup>th</sup>. A variety of different research topics were presented from groups from all over the northern plains including Montana, North Dakota, Nebraska, and Canada. The

meeting was free and open to the public and the audience was mixed and contained both researchers and farmers who are affected by the wheat stem sawfly. The wheat stem sawfly is the number one insect pest of wheat in the state of Montana has caused over \$100 million in crop loss every year for the past three years and there is growing concern that the insect is causing increasing damage farther south.

Researchers presented talks on 23 different areas of wheat stem sawfly research looking at seeding systems as a

way to help manage the wheat stem sawfly as well as management techniques including cut level of stubble and burning. Researchers also discussed solid stem wheat varieties and using wheat genetics to help develop more resistance to the wheat stem sawfly in wheat lines. Others presented on the use of bio-control agents for control of the wheat stem sawfly and trying to develop and optimize these systems. One talk looked at the geographic patterns of genetic diversity in Montana for the wheat stem sawfly in both native grasses and wheat. I presented my research on the discovery of odorant receptors in the wheat stem sawfly and using these in a 'reverse chemical ecology' approach to support the development of management techniques based on olfaction. Kevin Wanner presented an update on the sequencing of the wheat stem sawfly genome and how this genome can be a useful tool to help address questions regarding management strategies and basic molecular biology questions of the wheat stem sawfly.

This conference was a great collaborative effort and showed the many different aspects of research on this agriculturally important pest. The wheat stem sawfly has been an issue since the 1920's and is being tackled from multiple ends including from the wheat, pest and farmer perspective. It was great to meet not only with other scientists from around Montana but also from the Northern Plains area that are interested in this pest. In addition, it was wonderful to get to interact with farmers and get their feedback on my research and see how they are being impacted by this issue.

### **Shampeny Chosen to Attend Turf Seminar**

**By Tracy Dougher**

Environmental Horticulture Science student Kris Shampeny was recently selected by the Jacobsen Company as one of 30 students from throughout the U.S. to attend the 2012 Jacobsen Future Turf Managers' Seminar. This all-expense paid seminar will to be held at Jacobsen's Headquarters in Charlotte, North Carolina



*Kris Shampeny*

May 14-17, 2012. The program provides students with the opportunity to visit some of the nation's most prestigious golf courses and interact with several of the top professionals in the turfgrass industry. Jacobsen's Future Turf Managers' Seminar is

open to one graduating baccalaureate student from seventy-one universities throughout the United States. Kris is graduating this December with a B.S. degree in Environmental Horticulture Science.

### **The 5<sup>th</sup> Annual Horticulture Open House By Jill Scarson**

The 5<sup>th</sup> Annual Horticulture Open House was held on Monday, April 16, at the Plant Growth Center, which is celebrating its 25<sup>th</sup> Anniversary this year. Students from the Landscape Design and Environmental Horticulture Science programs displayed this year's class projects and taught local middle school students about horticulture. Horticulture students gave hands-on demonstrations in propagation techniques and general information on horticulture.

James Freeborn, a graduating senior in the Environmental Horticulture Science program, demonstrated the proper method for potting flower bulbs for either indoor or outdoor use.

James told me, "The open house is a great way to show the community and prospective students what goes on in the Plant Growth Center and subjects being taught in PSPP. This also gives students within PSPP a chance to practice public speaking and teaching."

The "How Green is Your Thumb?" Recycled Container Garden Competition was also held during the Horticulture Open House. Students, as well as the general public, were invited to enter their recycled container creations for a chance to win awards and prizes. Many beautiful and



*James Freeborn and local middle school students*



*Jamie Raznoff's "A Salad for Every Pallet"*

unique container gardens were submitted, including the winner of the People's Choice Award, Jamie Raznoff with her entry "A Salad for Every Pallet". Jamie, a junior in Environmental Horticulture Science, created her colorful layered container garden using a recycled wooden pallet.



*Left to Right: Luke Bromley, Lucas Parriman and Hannah Stocks demonstrating Layering 101*



*Heather Begger's "Thinking on the Edge of the Box"*

The Juried Award was given to Landscape Design senior, Heather Begger, for her submission "Thinking on the Edge of the Box," which utilized cardboard boxes of differing size and shape.



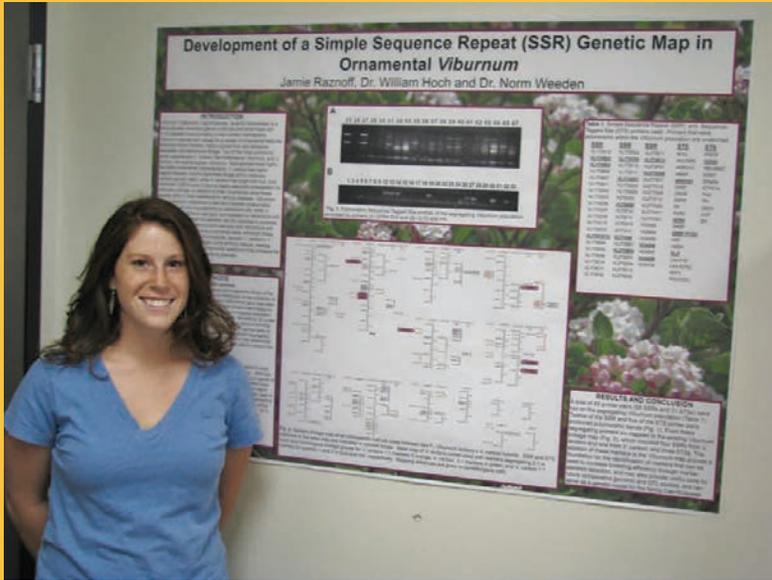
*Left to Right: Tyson Stillman, Adam Cayko and Cassie Peters demonstrating Plant Propagation*

### **The Montana State University Student Research Celebration By Jill Scarson**

On April 14, more than 250 Montana State University undergraduate and graduate students presented their research projects at the annual Student Research Celebration held in the Strand Union Building. The Department of Plant Science and Plant Pathology had six students participate in this year's celebration, which gives the university and general public the opportunity to learn

about the student research that has been conducted this academic year.

Environmental Horticulture Science graduating senior, Jamie Raznoff, presented her research project entitled "Development of a Simple Sequence Repeat (SSR) Genetic Map in Ornamental *Viburnum*." She was assisted in her research by Dr. William Hoch and Dr. Norm Weeden.



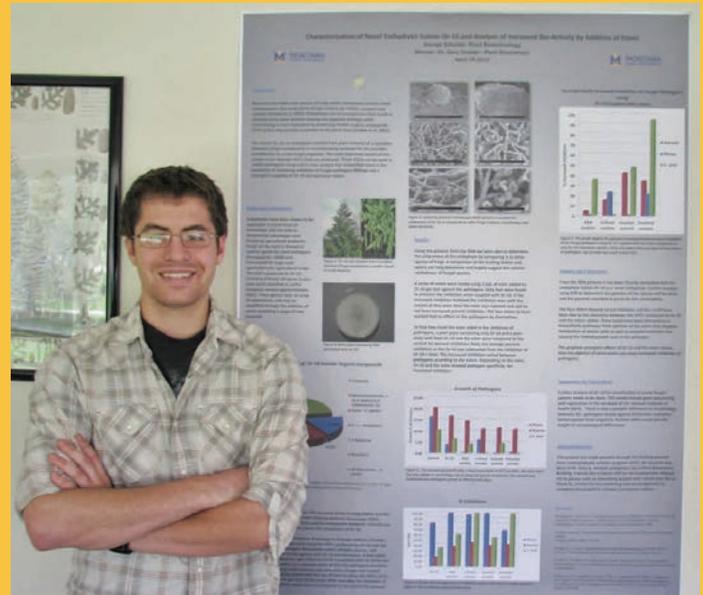
Jamie Raznoff

Charles J. Hart, a senior majoring in Organismal Biology with a minor in Entomology, presented his research "A Faunal Treatment of the Cerambycidae of Montana." He collaborated on this project with James Cope and Dr. Michael A. Ivie.



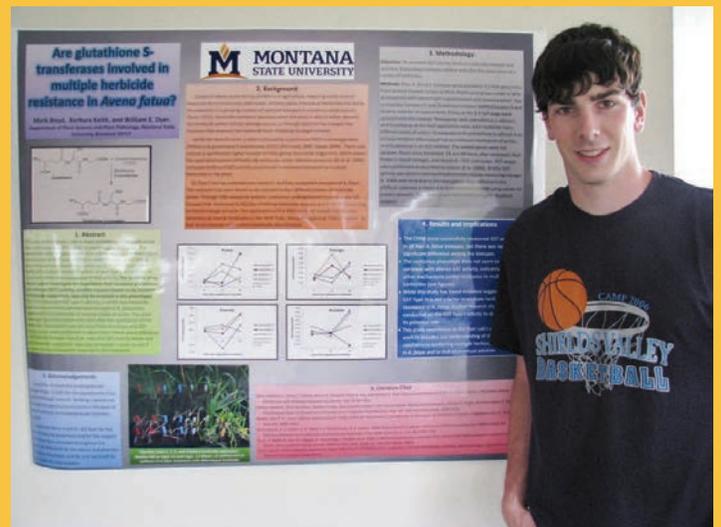
Charles Hart

Plant Biotechnology student, George Schaible, displayed his research "Characterization of Novel Endophytic Isolate Or-10 and Analysis of Increased Bio-Activity by Addition of Esters." Throughout his project he was mentored by Dr. Gary Strobel.



George Schaible

Mark Boyd, a sophomore majoring in Agricultural Business and a student in Dr. William Dyer's Weed Physiology Lab, also presented his GST study in Wild Oats entitled "Are Glutathione S-Transferases Involved in Multiple Herbicide Resistance in *Avena Fatua*?"



Mark Boyd

Jankiben Patel also presented her research, "Generation of a T-DNA Mutagenized Camelina Population." Jankiben is a senior Biotechnology major and worked in collaboration with Dr. Chaofu Lu.



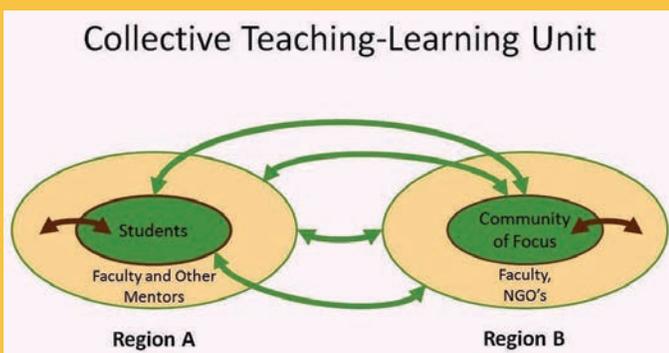
Jakiben Patel and Priyanka Kudalkar

### Class Focus

### AGSC 465R – Health, Poverty, Agriculture: Concepts and Action Research

By Florence Dunkel

Poverty has no disciplinary home and so this course draws information and students from all disciplines including economics, anthropology, microbiology, cell biology, architecture, agricultural education, film, engineering, as well as plant sciences, health sciences, sustainable foods, and entomology. Food production and health are given equal weight with exploring ways to listen in communities experiencing material-resource poverty. Practicing to communicate leads students to appreciate cultural wealth of the community-of-focus.



AGSC 465R is a University Core course in Research and Creative Activity. The course is based on the Expansive Collaborative (EC) Model for Service-Learning and Community-Based Research (Dunkel, F.V., A.N. Shams, and C.M. George. 2011. Expansive collaboration: A model for transformed classrooms, community-based research, and service-learning. North American College Teachers of Agriculture. 55 (Dec):65-74.). The (EC) model is built on the holistic process and, as such, serves as a companion course to LRES 421 Holistic Thought and Management.

Communities-of-focus and their site mentors form an off-campus teaching partnership for this course. To qualify, a community must have a long established relationship with the instructor or be an intact, indigenous community of the student. At MSU, communities-of-focus currently are: Sanambele, Mali; Lame Deer, Montana; and Crow Agency, Montana. Site mentors for Mali are mid-career scientists and one engineer who were brought to MSU for two years for training, some of which occurred in PSPP. Four of the site mentors for Lame Deer spent time in Mali and actually lived in Sananbele. The site mentor for Crow Agency is a former AGSC 465R student, member of the Apsaalooke, and manager of the Community Garden Greenhouse.

Students tackle concepts such as: Easterly's (2006) "Searchers vs. Planners"; Ayittey's (2005) *Africa Unchained* and *Indigenous African Institutions*; Norberg-Hodge's "Ancient Futures: Learning from Ladakh"; and Yunus "The Grameen Bank." Simultaneously, students are introduced to their community-of-focus and given skills to communicate with them, particularly those of: Savory and Butterfield (1999) "Holistic Management"; Chambers et al. (1989) *Farmer First*; and Halvorson et al. (2011) understanding perceptions. Readings were selected by a team of MSU faculty during weekly discussions over a year.

The community selects the research question, or, rather, the topic emerges during holistic discussions with the

community. Often community requests require multiple semesters to complete. Students build on predecessors' research. Accomplishments include assisting a village to sustainably stop deaths of their children from malaria. In 2005, MSU students, site mentors, and MSU faculty listened to Sanambelean women and men explain their desire to rid their village of malaria. MSU students began with storytelling the life cycles of mosquitoes that carry the protozoan and life cycle of the protozoan itself that causes malaria. MSU students assisted Sanambelean junior high students initiate a community awareness art project. AGSC 465R faculty and students majoring in French and Business encouraged village women to start a handicraft enterprise. The last time a child died of malaria in this village was during the 2008 malaria epidemic. Students taught villagers how to manage mosquitoes sustainably in the larval stage by using a slurry made from neem leaves, *Azadiracta indica*. Now villagers have a successful, self-contained, integrated system for managing malaria and are sharing the life cycle stories with neighboring villages. Village women developed a handicraft cooperative and microloan system that also involves village men and youth. MSU students now help the village address the current barrier to attaining their desired quality of life: sustainably managing kwashiorkor, protein energy malnutrition. Crop selection, improving dairy forage, cricket farming, and teaching the basics of complete proteins to a village whose adults are 99% illiterate are challenges MSU students have addressed. In the Apsaalooke community on the Crow Reservation, issues are similar - health, new knowledge that respects traditional ways, and sustainability. Yunus and the Grammeen Bank began in a similar way with the professor (Yunus) and his students putting into action in local material-resource poor communities, concepts they discussed in the classroom. We encourage more courses to reach out across cultural boundaries to sustainably connect people with plants, health, and traditional knowledge.

AGSC 465R is taught every semester. It is a 4 credit course and meets Thursdays from 4 to 7pm. Thirty-minute individual weekly mentor meetings with Dr. Dunkel are held in her office and laboratory. Students also are required to communicate with their site-mentors on at least a weekly basis via e-mail, Skype, phone, Polycom, or in person. During the semester each student is required to visit the Northern Cheyenne Reservation or the Apsaalooke (Crow) Reservation for 2 days with Dr. Dunkel regardless of their specific community-of-focus.

Midway in the semester, students are required to write a take-home exam applying concepts of the 10 author groups to their own community-of-focus. Since the course format is service learning, students are also required to keep a reflective log to monitor their own progress and track their cognitive dissonance. These logs form a basis for discussion at weekly mentor meetings in addition to advice on the research process. At semester's end, students present publically their response to the request of their community and submit their mentored research paper in peer-refereed journal format to site mentors and Dr. Dunkel. All materials, video transcripts, and documents produced by the students are then given to the community-of-focus.



*AGSC 465R Share the Wealth Symposium participants Adam Pohl, Taylor Stuck, and Andrew Stermitz pose questions to each other at poster session in the PBB atrium.*



*Hannah Fraser responded to urgent request of Malian villagers about to enter extended period of hunger. She and fellow AGSC 465R students proposed cricket farming. In lab bioassays, Hannah discovered crocheted fabrics made by village women were best to contain crickets in proposed village-made clay brick structures.*

## **Environmental Horticulture Science and Landscape Design Summer Internship Opportunities**

**By Jill Scarson**

Internships are a great opportunity for students to put the skills they have learned in the classroom to use. They offer hands-on experience and knowledge and training that can only be obtained "on the job."

Former students have had internships with a diverse field of employers, including botanical gardens, universities, museums, golf courses, landscape design firms, and Walt Disney World. All internship are also posted on the PSPP website at <http://plantsciences.montana.edu/horticulture/internship.html>

### ***Horticulture Internships include:***

American Floral Endowment  
 Arnold Arboretum  
 Bailey Nurseries  
 Ball Horticultural Company  
 Berkshire Botanical Garden  
 Big Timber Tree Board  
 Blake Nursery  
 Brookfield Zoo  
 Bozeman Youth Initiative-Greenhouse Bus Program  
 Carlton Plants

Center for Environmental Farming  
 Chicago Botanic Gardens  
 Denver Botanic Gardens  
 Dow Agro Science  
 Filoli Garden  
 Grow Montana  
 Kalu Yala Internship  
 Lloyd Noble Scholars in Agriculture  
 NC Region Sun Grant Center  
 Madison Farm to Fork Greenhouse Internship  
 MSU Extension Summer Internships  
 Noble Summer Research Scholar Internships  
 Purdue University  
 Scott Arboretum of Swarthmore College  
 Seed Savers Exchange  
 Smithsonian Gardens  
 Student Conservation Association  
 Threemile Canyon Farms  
 Tower Hill Botanic Garden  
 University of Georgia Cooperative Extension Internship  
 WestLand Resources, Inc.  
 Wolves and Moose of Isle Royale

### ***Turfgrass Management Internships include:***

Quail Hollow  
 The Round Hill Club  
 The Plateau Club

### ***Landscape Design Internships Include:***

Lawn & Landscape Magazine  
 Valley of the Flowers Landscaping, Inc.

## **Montana Ag Live! Schedule - Sundays at 6:00 p.m.**

May 6 - Nina Zidack, Executive Director of the Montana Seed Potato Certification Program, "Montana Seed Potatoes for the Home Gardener – Why planting Montana Certified Seed Potatoes is Important"

May 13 - May 13: Gary Adams USDA-APHIS, "Invasive Pest Species".

May 20—Amy Gannon, State Forest Pest Management Specialist, "The Current Pine Beetle Situation as Well as Other Forest Pests".

### **Dougher Awarded Membership in MSU Faculty Development**

Tracy Dougher was recently awarded membership in MSU Faculty Development by attending eight hours of their sponsored workshops. Tracy along with eleven other new members were recently recognized at the Office of Faculty Development Reception on April 25 in the SUB. This was the first class of Faculty Development members. Congratulations Tracy!

### **Britton Receives Faculty Development Award**

Jennifer Britton recently submitted a proposal for a Faculty Development Award for AY 12-13 and was awarded \$3,450. The reward is for funding for travel to advance her research program. Congratulations Jennifer!

### **Grants**

Z. Miller and M. Burrows. "Solving spring survival for winter canola in Montana." Pacific Northwest Canola Research Program. \$7,391.

Wunsch, Schatz, Tjelde, M. Burrows. "Evaluation of fungicides for management of foliar blights of lentils." Northern Pulse Growers Association. \$4500.

W. Dyer, F. Menalled, E. Lenhoff, B. Keith, B. Maxwell, and B. Peterson. 2012-2015. "Molecular, physiological, and ecological characterization of multiple herbicide resistance in *Avena fatua*." USDA/NIFA/AFRI. \$500,000.

W. Dyer (PI), A. Harmon, B. Maxwell, and P. Hatfield. 2012. SFBS and Towne's Harvest Garden: A Proposal for Critical Equipment Needs at the MAES Horticulture Farm. MAES. \$13,446.

### **Publications**

Kalinina, E. B., L. Lee, B.K. Keith, and W.E. Dyer. 2012. Salt and osmotic stress-induced choline monooxygenase expression in *Kochia scoparia* is ABA-independent. (DOI) 10.1007/s10535-012-0132-0 (In press, *Biologia Plantarum*).

Keith, B.K., E.B. Kalinina, and W.E. Dyer. 2012. Differentially expressed genes in dicamba-resistant and susceptible biotypes of *Kochia scoparia*. (In press, *Weed Biology and Management*).

### **Video on New Option**

Sam Atkins and Dylan Strike, students at MSU, produced a short film on the local food production system in the Gallatin Valley. It has information on the new interdisciplinary option in our Department: *Sustainable Crop Production* (under the major Sustainable Food and Bioenergy Systems). It is a 20 minute Vimeo production that can be accessed at:  
<http://vimeo.com/samatkins/bozeman eats>

### **Hongtao Welcomes Son Andy**



Hongtao Zhang (Li Huang's lab) and her husband, Wenchao Feng, welcomed their son Andy into the world on April 9. He weighed 8 lb 6 oz.

Congratulations Hongtao and Wenchao!

### **Giant Pumpkins**

#### **By Toby Day, Extension Horticulture Associate Specialist**

Last month while teaching a Level II Master Gardener class for the MSU Flathead Reservation Extension office, I met quite an interesting individual by the name of Emmet May. Emmet, who resides in Arlee, has the distinction of growing the largest pumpkin in Montana at a whopping 893 pounds. His record pumpkin grown in 2011 beat the previous state record by over 111 pounds. The previous record pumpkin was grown in Shelby, Montana, by Kyle Koschmeder weighing in at 782 lbs.

Emmet, a Montana Certified Master Gardener doesn't just grow giant pumpkins; he lives, eats and breathes giant pumpkins. His 2012 goal is to grow a giant pumpkin that is over 1,000 pounds! That is one huge pumpkin for Montana considering that the world record giant pumpkin is 1,818.5



Emmet May from Arlee Montana atop his state record giant pumpkin

pounds. And, May has only been growing giant pumpkins for four years. His first one only reached 190 pounds.

May is so eager to share his passion to grow giant pumpkins, that he is willing to go to other parts of the state to teach others how to grow giant pumpkins. And, in his quest to get more people interested in growing pumpkins, he was willing to give out seeds at the class. Considering that giant pumpkin seed can cost usually from \$15 to \$200, with world record seed fetching up to \$2,600; I felt this was quite generous.

The giant pumpkins are really a giant squash (*Cucurbita maxima*) that when growing at their optimum, can put on 6-8 inches in girth and increase their weight up to 50 pounds per day! However, to accomplish this takes time, a ton of inputs, and a whole lot of luck.

Emmet gave me four seeds to try as long as I entered my pumpkins in the Giant Pumpkin contest in Polson in September. Because of my good fortune of receiving four of the giant seeds (and they are quite big!), I gave two to my good friend David Baumbauer to try. And, the competition has already started. David and I have a friendly bet on who can grow the largest pumpkin.

I hope to share our progress throughout the growing season with our colleagues in this Department and others interested in our endeavor. Who knows, maybe the next state record will come from Bozeman? We'll keep you posted.

**Recipe of the Month**

Corn Zucchini Salad

- 2 (16 oz) packages frozen corn kernels, thawed
- 2 small zucchini, diced
- 1 (2 oz) jar chopped pimentos
- 1/2 c chopped red onion
- 1 (4 oz) can chopped green chili peppers, drained
- 2/3 c olive oil
- 1/4 c fresh lime juice
- 2 T cider vinegar
- 2 t ground cumin
- 1 1/2 t salt
- 1 t ground black pepper
- 1/2 t garlic salt



In a large bowl, toss together the corn, zucchini, pimentos, red onion, and green chile peppers.

In a jar with a lid, mix the olive oil, lime juice, cider vinegar, cumin, salt, pepper, and garlic salt. Seal, and shake well.

Pour the oil mixture over the corn mixture, and gently stir to coat all ingredients. Cover, and chill at least 3 hours in the refrigerator before serving.

**May Birthdays**

- Mina Talajoor 6
- Tawnya Morgan 8
- Heathe Rimel 12
- Matthew Moffet 14
- Robyn Klein 15
- Chaofu Lu 16
- Mareike Johnston 22
- Kim Prosek 22
- Tom Blake 24
- Gene Ford 29
- Bob Johnston 29
- Deanna Nash 31

