

# *Plant Science Says*



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## **PSPP Celebrates Graduation**

On May 4, the Plant Sciences and Plant Pathology Department held a reception and awards ceremony for our graduates in 108 PBB/Mathre Courtyard. The graduates received the following books: Landscape design graduates - "The Artful Garden: Creative Inspiration for Landscape Design"; Crop Science graduates - "Weeds of the West"; Plant Biotech graduates - "Plant Biotechnology: The Genetic Manipulation of Plants"; and Plant Biology graduates - "Botany of Desire". Horticulture graduates received loupes (magnifying glass). All the graduates received a cowbell from the College of Agriculture, a coffee mug and either a Wandering Jew, Miniature, Jade, Begonia, or Coleus from the Department. [Pictures of this event are on page eight.](#) Following are the names of all those that received diplomas and awards.

Congratulations to each of you and we wish you all the best in your future endeavors!

## **Faculty Awards**

### **ESA Excellence in Teaching Award**

*Florence Dunkel*

### **Horticulture Club Teacher of the Year Award**

*Jennifer Britton*

## **Graduate Students**

*Peng Liu- Ph.D., Plant Genetics*

*Alanna Schlosser- M.S., Plant Science*

## **Undergraduates**

### **Biotechnology - Plant Systems**

*Pallavi Chheda- B.S.*

*Steven Hystad- B.S.*

*Priyanka Kudalkar- .B.S.*

*Andy Lord- B.S., Highest Honors*

### **Environmental Horticulture - Horticulture Science**

*Jake Flentie- B.S.*

*James Freeborn- B.S.*

*Erin Gunnink- B.S., Honors, ASHS Collegiate Scholars Award, ASHS Outstanding Undergraduate Horticulture Student Award, COA Outstanding Senior Award, PSPP Outstanding Senior Award*

*Taylor Myers- B.S.*

*Kevin Shields- B.S.*

*Gerald Smith- B.S.*

### **Environmental Horticulture - Landscape Design**

*Kayce Flathers- B.S., Honors*

*Donald Gallagher- B.S.*

*Bradley Hooley- B.S.*

*Ashlee Johnson- B.S.*

*Cassandra Peters- B.S., Highest Honors, ASHS Collegiate Scholars Award, Art for Ag's Sake*

*Tyler Schroeder- B.S.*

*Trenton Smith- B.S.*

*Allen Steckmest- B.S., Honors*

### **Plant Sciences - Crop Science**

*Shane Cottom- B.S.*

*Matthew McCabe- B.S.*

### **Plant Sciences - Plant Biology**

*Adam Hydorn- B.S., Honors*

### **Sustainable Food & Bioenergy Systems - Sustainable Crop Production**

*Timothy Reusch- B.S.*

*John Thiebes- B.S.*

## **WAOSCA Seaside**

### **By Bill Grey**

A trio of land-locked Montanans headed on a journey during the spring breakup to a rendezvous of the western American Organization of Seed Certification Association (AOSCA) and the affiliate



*Ron Larson, headin' west 'til his hat floats, Seaside Oregon.*



*Heather Rimel, keeping the rawhide dry while dipping in the Pacific Ocean.*

Foundation Seed Programs at Seaside, Oregon. The seed certification members in the western states assemble yearly to deal with topics that are important to the integrity of a plant variety and crop propagation materials. The website for AOSCA <<http://www.aosca.org/>> provides an overview of the mission and events, as well as job listings in the US. The public Foundation Seed organizations continue to be associated with AOSCA as the seed sources for new plant varieties. Basically, the two groups do their best to insure "truth in labeling" and provide a certification platform for the private industry to expand and sell pure seed to the growers in our western states.

The historical significance of Seaside is that it was the overwintering camp of the Lewis and Clark Expedition in 1805-06 where they built Ft. Clatsop, harvested the Jefferson elk, consumed copious quantities of salmon, spun tall tales with the locals and also prepared the salt rations for their return trip to Montana. These modern day travelers were treated to a 'sushi' cuisine

with fermented byproducts from barley, labored under two days of certified talk, and packed our provisions with salt water taffy and hazel nuts for the journey home. Seaside is a beach town with a low/low tide that goes out a half mile into the Pacific Ocean, and is perfect for shelling, clamming, strolling, and dodging swells. The Multnomah waterfalls in the Columbia River Gorge is a half day excursion from downtown Portland, well worth the vistas and hikes. Portland is an eclectic city of brew pubs, all manners of food carts, botanical gardens in Japanese and Chinese venues and also an annual Rose Festival. By the way, Seaside is a great location for a business meeting.



*Bill Grey, headwear for the Journey of the Corps of Discovery, Ft. Clatsop, OR*



*Creative rain spout built from natural products of the Oregon coast.*

## **Workshop on Backyard Bees Offered in Ronan**

**By Ruth O'Neill**

Ruth O'Neill (PSPP), assisted by Casey Delphia (LRES) presented a workshop on "Inviting Bees Into Your Garden" to 30



Master Gardeners in Ronan on April 24. There was a special emphasis on solitary bees, with information on how to attract them with bee-friendly flowers and with home-made nesting shelters.

After a quick PowerPoint presentation to start things off, the majority of time was spent making nesting shelters. We made an enormous mess inside the Lake County Extension building, but people really seemed to enjoy themselves so the chaos was worthwhile. Participants cut old fence posts into short lengths and then drilled an array of 6-inch deep holes into one end. They also cut PVC pipe into 7-inch lengths, capped one end, and then stuffed them with hollow dried plant stems, offering a variety of hole diameters to attract a diversity of bee species. Both types of nest shelters can be hung in trees or along the shady side of fences to attract nesting female solitary bees.



Most people are familiar with domestic honey bees and bumble bees, which build large and complex social nests and sometimes sting aggressively to defend them. Like honey bees and bumble bees, solitary bees can sting. But they're much more mellow-tempered, and therefore rarely sting unless they are seriously provoked. Unlike the social bees, a female solitary bee builds her nest without any help from other bees. Nests are made out of leaf pieces, mud, resin, or plant fibers.

Solitary bees are excellent pollinators of beans, peas, cucumbers and squashes, tomatoes, eggplants, and many other

vegetables that require pollination to yield edible produce. Most solitary bee species are much smaller than honey bees.

An added benefit to providing nesting shelters in a home garden is that they also attract many species of solitary wasps. Solitary wasps stock their nests with aphids, grasshoppers, and other garden pests, paralyzing them with a sting that keeps them fresh and immobile while their larvae feed upon them. Like solitary bees, the solitary wasps are non-aggressive around humans and pets.

### **Kyrgyzstan Group to Visit Montana by Ron Larson, Manager, Montana Seed Growers Association**

A USDA Cochran Fellowship sponsored group from Kyrgyzstan will be studying forage production and use as well as touring various area dairy farms, seed farms and distribution facilities. They will also be meeting and interacting with MSU researchers and extension specialists from June 11-20. The group of eight farmers and agriculturists will be led by Jim Stanelle, former seed certification manager from Colorado, and will be assisted by an interpreter during their stay in the area. Additionally, they will tour various MSU labs such as the Plant Disease Clinic, Potato Lab, Analytical Lab, and Veterinary Diagnostic Lab. They will also have an opportunity to visit Yellowstone Park on a weekend. Plans include attendance at the Central Agricultural Research Center Field Day at Moccasin, and may include a tour of the wind energy farm at Judith Gap. The ultimate goal of the group is to be exposed to new and improved agricultural practices and production methodology that may be considered and applied in their country.

### **Field Days**

Central Ag Research Center - Moccasin  
Tuesday, June 19, 2012,  
9:30 am – 1:30 pm

Southern Ag Research Center - Huntley  
Wednesday, June 20, 2012  
Registration at 9:00 am, Tours at 10:00 am  
and 1:00 pm

MAES Summer Conference at SARC  
Wednesday, June 20<sup>th</sup> at 3:00 pm  
Thursday, June 21 time to be announced  
Western Ag Research Center - Corvallis  
Thursday, June 28, 2012

Northern Ag Research Center - Havre  
Thursday, July 12, 2012

Post Farm - Bozeman  
Wednesday, July 18, 2012

Eastern Ag Research Center - Sidney  
Thursday, July 19, 2012

Northwestern Ag Research Center -Kalispell  
Wednesday, July 25, 2012

### **Class Focus**

### **BIOO 435 - Plant Systematics**

**Matt Lavin**



Students in Range Science, Land Resources, and the various Biology degree options often have to learn how to identify plant species as part of their studies of vegetation and

restoration. BIOO 435 is therefore designed to introduce to such students upwards of 200 of the most common plant species that inhabit riparian, shrub-prairie, and disturbance-prone settings in Montana. Because nearly 3,000 plant species occur in Montana in such habitats, the course is also designed to familiarize students with how to use taxonomic keys so that they can leave the course being able to potentially identify the many plants species previously never seen. In order to use taxonomic keys successfully, however, students have to know how to sight identify, at least to some degree, a given plant not just to the species, but also to the genus or family. This is why the 200 or so common Montana plant species are introduced in BIOO 435. The ability to sight-identify these to the family, genus, and species level actually facilitates the use of taxonomic keys on unknown plant specimens. Such ability helps to create

mental landmarks in the otherwise difficult and bumpy landscape of the world created by taxonomic keys. Without such mental landmarks, taxonomic keys are practically impossible to use. The taxonomic keys used in BIOO 435 are those in the book, "Vascular Plants of Montana" by Robert Dorn (1984). During the next year or two, this book will be replaced by "The Flora of Montana" by Peter Lesica.



*Photograph of the very common and native Vicia americana, American vetch, which grows in open dry sites and, like other member of the genus Vicia, has a predilection for disturbance-prone or frequently disturbed sites. The genus Vicia is one of the few dry-site inhabiting viney herbs in Montana (evinced in part by the leaves that terminate in tendrils).*

Students meet once a week on Monday afternoons. Confining the class to this time often enables people with jobs to take the course; for example, those who work for government or environmental consultant agencies. The noon hour "lecture" is spent introducing the plant families and genera that will be studied that afternoon. Relevant plant families and genera are typically collected that morning in the field and are brought in for display during lecture. For lab, students are given about 15 plant specimens that have been pressed and dried during the summer when the plants were in flower. The afternoon is then spent partly indoors preparing a reference set of plant species for that day, as well as outdoors, where students can see the relevant plant species in fall conditions.



Photographs of all of these species are taken so that the 3-dimensionality and close-ups of flowers, fruits, and other diagnostic traits can be readily accessed via a collection on [www.flickr.com](http://www.flickr.com). These photographic collections include sets for local sites in Bozeman, such as Burke Park ([http://www.flickr.com/photos/plant\\_diversity/sets/72157620805880377/](http://www.flickr.com/photos/plant_diversity/sets/72157620805880377/)) and the Gallagator Trail ([http://www.flickr.com/photos/plant\\_diversity/sets/72157620806308215/](http://www.flickr.com/photos/plant_diversity/sets/72157620806308215/)). These photos are augmented by a collection of about 200 plants species given to the students during the semester. Students can opt to make a taxonomically organized reference collection from these specimens which can be taken with them at the end of the semester. Such a collection is, or should be, invaluable to those students working on aspects of Montana vegetation.



*Photograph of a close-up of the flower detail of Vicia americana. The wing petals (top and bottom) enclose the keel (center), which in turn houses the reproductive parts. This floral morphology has a bilateral symmetry that is unique*

It is my hope that students who leave BIOO 435 will be able to make first-hand observations of the plant world and realize for themselves that there is not much of a difference between native and introduced plant species and that introduced species often rarely become problematic weeds. With nearly 3,000 plant species in

Montana alone, it is difficult for any one of these species, or even a small subset, to gain an advantage over the others.

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

June 3 - Stephanie Ewing, Land Resources and Environmental Sciences, "Nitrate contamination in water supplies".

June 10 - Vince Smith, Ag Econ, "Are Farm Subsidies Becoming Extinct".

### **Grants**

Wanner, Kevin, Montana Department of Agriculture, New seed treatments to control wireworms infesting seed potatoes, 17,400.

Dougher, Tracy – Exploring Group Activities with Smart Pens, MSU Smart Pen Grant, 6 pens (~\$600 value)

### **Publications**

Skoglund, Linnea and Tamla Blunt, "The Plant Diagnostic Experience", APSnet Features. <http://www.apsnet.org/publications/apsnetfeatures/Pages/diagnostician.aspx>

### **Videos**

Cripps, Cathy, "Morel Season", filmed by Ben Pierce of the Bozeman Daily Chronicle, <https://vimeo.com/4265985>

### **Renovation of a Strawberry Bed By Toby Day, Extension Horticulture Associate Specialist**

Renovation of a strawberry bed involves the extraction of weeds, removing old, worn-out strawberry plants, reducing the canopy of leaf material, establishing pathways and removing an abundance of runners. It is the most neglected practice with home gardeners that grow strawberries. Renovation should occur just after harvest of June-bearing strawberries – the most common strawberries that we grow in Montana. The strawberries usually go into a semi-dormant state for about a month after the harvest. Therefore, the plants are less affected by renovating at this time. Renovating will help stimulate new growth next year as well as interrupt

insect and disease cycles in older plants.

There are several steps in renovating that will help ensure that you have a better crop next season:

**Remove the foliage.** After harvest, the foliage should be removed, but not so low that it damages the crown of the plants. Foliage removal will reduce any insect infestations or diseased leaves and will stimulate new growth in the future. O.K., I know that will sound extreme, but I like to set the deck of my lawn mower at the highest height and mow over the strawberries (of course using the bagging attachment), then rake out the remaining material. It may be a little drastic, but it works and it is fast.

**Weed the strawberry bed.** Weeding should also be done at this time because the strawberry plants are semi-dormant and will not be as affected by the root disturbance that happens with weeding.

**Remove older plants.** Strawberry plants fruit the most in their third year and will diminish fruiting their fourth and fifth year. After the fifth year the plants stop producing overall. So, it is best to remove the old plants and let the younger, more prolific plants take their place.

**Establish rows.** The best strawberry beds are planted in matted rows with pathways in between, rather than having a large uncontrolled mess of a planting bed. Matted rows allow for easier picking and less competition between plants. Matted rows



*Typical "matted row" strawberry bed*

should be no more than three feet wide, 18 inches is best.

**Fertilize.** After harvest, the main goal is for the plants to put on a lot of foliage, growing the canopy into fall. Apply a high nitrogen and high potassium fertilizer just after removing the foliage. One half to one pound of actual nitrogen per 1000 square feet of strawberry bed is recommended. That is approximately .2 to .4 pounds of actual nitrogen per 100 foot row of strawberries. It is best to find nitrogen that is in the quick release form, as you want to establish the foliage as soon as possible after harvest.

**Irrigate.** The strawberry plants should not be water stressed the rest of the season. The root system of strawberries is similar to turfgrass in depth (4"-6" deep) and the irrigation amount is equivalent. Strawberries should receive 1 to 1-1/2 inches of water each week.

### **Recipe of the Month**

#### Grilled Salmon

1 1/2 lbs salmon fillets  
Lemon pepper to taste  
Garlic powder to taste  
Salt to taste  
1/3 c soy sauce  
1/3 c brown sugar  
1/3 c water  
1/4 c olive oil or canola oil



Season salmon filets with lemon pepper garlic powder, and salt.

In a small bowl, stir together soy sauce, brown sugar, water, and oil until sugar is dissolved. Place fish in a large resealable plastic bag with the soy sauce mixture and salt and turn to coat. Refrigerate for at least two hours.

Preheat grill for medium heat. Lightly oil grill grate. Place salmon on the preheated grill, and discard marinade. Cook salmon for 6 to 8 minutes per side, or until the fish flakes easily with a fork.

## June Birthdays

Israel Davich	2
Jill Scarson	3
Zachariah Miller	4
Ron Ramsfield	15
Jackie Kennedy	15
Ron Larson	12
Luther Talbert	18
Eileen Carpenter	22
Bill Hoch	25
Stan Bates	28





# CONGRATULATIONS!

*Plant Sciences and Plant Pathology, Class of 2012*



*John Sherwood presenting Erin Gunnink with PSPP Outstanding Senior Award*



*Faculty, staff, and guests*



*Florence Dunkel receiving ESA Excellence in Teaching Award, also Kaycee Flathers and her family*



*John Sherwood and Andy Lord*



*Tracy Dougher and James Freeborn*



*Jennifer Britton receiving the Hort Club Teacher of the Year Award from Brad Hooley*



*Rebekah VanWieren, Alanna Schlosser, and John Sherwood*



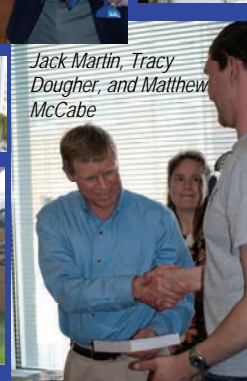
*Gifts for the Graduates*



*Faculty, staff, and guests*



*David Baumbauer, Tyler Schroeder and family and Rebecca VanWieren*



*Jack Martin, Tracy Dougher, and Matthew McCabe*



*Steve Hystad and Matthew McCabe*



*PSPP, Class of 2012*



*Deanna Nash, Priyanka Kudalkar, and Jackie Kennedy*



*Adam Hydorn and Priyanka Kudalkar and their families and Gary Strobel*



*Mike Giroux, Andy Lord, and Tracy Dougher*



*Tracy Dougher, Jennifer Britton, Cassie Peters, and Bill Hoch*



*John Sherwood and Steve Hystad*



*Trenton Smith and John Sherwood*



*Jake Flentie, Tracy Dougher, and Bill Hoch*