Plant Science Says

Happy Halloween!

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**A Record Year for Mushrooms---and other Mycological Events**
**By Cathy Cripps**

The 2009 summer field season was one of the best for fungal fruiting in many years. Don Mathre noted it was an excellent year for gardening and the same was true for mushroom hunting, whether collecting fungi for research or table. The season started slowly with few yellow morels along the rivers due to cold temperatures, but soon there were reports of black morels coming up in abundance on last year's burns. The rainy weather that followed produced incredible flushes of tasty golden chanterelles (*Cantherellus cibarius*), king boletes (*Boletus edulis*), hawk wings (*Sarcodon imbricatum*), sweet tooth fungi (*Dentinum repandum*), and more *all summer long*!

The SW Montana Mycological Society hosted summer forays for locals and this year participants usually went home with something to cook up for dinner. Because everyone was finding mushrooms (many noticing them for the first time), lots of samples were mailed in to the diagnostic lab, photos were emailed, bagfuls were brought to the mycology lab, and numerous calls were made to my office and home by folks who wanted their fungi identified. During one mushroom club foray, my husband and I kept running into such large chanterelle patches that he finally said, "Do we have to pick them?" This after years of finding only small nubbins to eat!

The downside was that we had quite a few cases of mushroom poisoning this summer. Two of the more serious cases resulted from eating toxic mushrooms—*Tricholoma* in one case and an *Amanita muscaria* variety *alba* in another. The first was delivered to my door by a state trooper late at night (since a toddler was also involved) and the second was brought over from Billings. In both cases, consumers thought that poisonous mushrooms were non-existent in Montana and that all were safe to eat! Everyone made a full recovery, but some spent significant time in the hospital. Please pass the word that mushrooms need to be correctly identified before consumption. Other cases involved eating old morels, too many morels, raw morels, morels with alcohol, or allergic reactions to morels. Yes, one of our best edible mushrooms is the culprit in a majority of mushroom poison cases in Montana. It is usually the black morel that causes problems and not the yellow variety.

<u>Other Summer Fungal Events</u>

In July the joint meeting of the Mycological Society of America and the Botanical Society of America was held in the high mountain country at Snowbird, Utah. It was an excellent venue for a meeting given that the alpine wildflowers were prolific just a short hike up the valley and we were continually surrounded by spectacular mountains peaks. The symposium I developed on the "Multiplicity of Fungal Form and Function in Arctic-Alpine Systems" was selected as one of the six main events. It was exciting to meet and interact with speakers I had chosen on fungi in cold-dominated environments. Other highlights for me were the sessions on ectomycorrhizal fungi and the one on the co-evolution of symbiotic interactions of plants and fungi. A majority of talks for both the botanists and mycologists were on phylogenetic relationships of particular taxonomic groups. The Mycology Auction is always interesting with members bidding on everything from mycological literature (old/new) to strange mushroom kitchen items. In two years, the MSA meeting will be held in Alaska and hopefully we will be able to combine this

with attending ex-graduate student Kate Mohatt's annual Mushroom Fair held in Girdwood Alaska. Kate is currently an ecologist for the USDA Forest Service which sponsors the fair (400 attendees this year!).

*Denver Mushroom Fair*

In August, I was the mycologist for their annual Mushroom Fair held at the Denver Botanic Garden sponsored by the Colorado Mycological Society. A large room in the Gardens was opened to the public and there were numerous displays including those on city mushrooms complete with turfgrass, edible mushrooms, poisonous mushrooms (Denver Poison Center), mushroom artwork, local mushroom diversity and mushroom book sale. My job was to identify as many of the mushrooms brought in by the club as possible in about a two day period and to interact with the public. Conditions were dry in Colorado, so not a lot of fungi were brought in, but DBG mycologist Vera Evenson (originally from Gallatin Gateway's Stucky family) and I did manage to identify and record over 100 species. The only real edibles were the chanterelles and a king boletes I brought in from Montana! An estimated 1500 people attended the event.

Later in August, Yellowstone National Park held its first "Bioblitz". Scientists were invited from all over to record as many organisms as possible in a 24 hour period in a selected area of the park around Mammoth. MSU participants included mycologists, entomologists (Mike Ivie and students), a lichenologist (Sharon Eversman), and Thermal Biology (Tim McDermott). The mycology crew was small but enthusiastic and consisted of myself, Bob Antibus, Don Bachman, and club members Ed Barge, Frank Miller, Mary Engel and Rosie Wallender. We collected and identified 86 species in the time period which is rather

*Mycology Crew at Yellowsone park 'Bioblitz'*

remarkable considering the dry habitats we were confined to. Participants then made displays for the general public in an outdoor venue. We had a lot of interest in our colorful fungal display and folks crowded in to ask questions of the 'experts'.

*Southwest Montana Mushroom foray at Hyalite Canyon in the rain.*

On the research side of things, we (my husband and I) made over 16 field trips to various areas, with Bob and Joanne Antibus joining us for the latter part of the summer and collecting on their own. The goal was to search for the elusive native ectomycorrhizal fungi that associate with whitebark pine and

limber pine which are dying due to blister rust, beetles, and perhaps dry climate conditions. There is a large ongoing effort to restore these forests and for our part we are discovering and capturing the native fungi that are beneficial and required for seedling establishment and forest sustainability. It is hoped that these native fungi, when inoculated onto seedlings grown in greenhouses will increase survival of out-plants. The research took us to Yellowstone National Park, Waterton Lakes National Park, Lewis and Clark State Park, and numerous places around Montana and Wyoming. Permits are required for the parks. We only encountered one bear this year, and it was a black bear so intent on eating huckleberries that we were ignored 30 feet away. Normally bears are common in the high elevation forests this time of year searching for pine nuts. We also stopped at the Glacier Park Nursery to inoculate whitebark pine seedlings which will be out-planted soon (if not already) with our new "super fungus" as Eva Grimme calls it. The wet conditions afforded quite an opportunity to find these beneficial fungi and we took full advantage of it.

*Cathy Cripps, Inoculation of whitebark pine in Glacier Park Nursery*

The October snow signals an end to the field season but it was quite a "mushroomy" summer in Montana!

**First MSU Community Hop Harvest a Success**
**By Vic Blake**

On Saturday, September 19, the Blakes hosted the first community harvest at the hopyard built last summer and populated with eight varieties this spring.

We harvested Cascade, Fuggles, Aromet and a North American landrace *Humulus lupinus*. Each plant yielded about a pound of fragrant cones. The fourteen foot bines were cut from the plant and harvesters then moved their bines into the shade where the task of picking the cones took place.

We extended the invitation to four of the local brewpubs and Lone Peak Brewery enthusiastically took up the offer. They collected forty bines, brought them back to the brewery at Big Sky where they had a ten person team waiting to pick the fresh cones to add to the brew that started that morning. This fresh hop ale should be ready in early October.

*Photo by MSU photographer Kelly Gorham*

Since the harvest, Swiss Tettnanger, Northern Brewer and Mt. Hood ripened. This allowed those that responded to the article published on the MSU webpage to have many hop varieties to choose from. We plan to harvest all of the hops this year and will be planting more varieties next spring. Hops are perennials, whose rhizomes overwinter and produce new shoots in the spring. Next years' crop should dwarf this years', so start brewing and bring your friends to the 2010 hop harvest!

**Montreal Botanical Gardens**
Following are a few pictures from the Montreal Botanical Gardens. With an outstanding collection that boasts more than 22,000 species and varieties of plants, the Montréal Botanical Garden is considered one of the world's best gardens. Over 180 acres, it features 10 exhibition greenhouses and over 30 outdoor gardens. The Chinese and Japanese Gardens offer exotic landscapes, whereas the Tree House displays Québec's abundant forest wealth.

**Publications**
Burrows, M., Franc, G., Rush, C., Blunt, T., Ito, D., Kinzer, K., Olson, J., O'Mara, J., Price, J., Tande, C., Ziems, A., Stack, J. 2009. Occurrence of viruses in wheat in the Great Plains region, 2008. APSnet feature article, September. www.apsnet.org.

**Grants**
Sharrock, R.A. 2009-2010. "Structure, function and signaling mechanism of plant phytochromes." NSF. $150,000.

Fischer, A."Characterization of a regulatory pathway controlling cereal leaf senescence." NSF. $250,000.

**Bob's Byte**
**By Bob Johnston**
**Windows 7 is scheduled for a October 22 release date!!**

If you have an older computer and took a pass on Microsoft's Windows, it might be time to consider Windows 7 as a replacement. But does your computer have what it takes to run Windows 7?
If your computer is running Microsoft Windows Vista OS (which most computers that shipped beginning in January 2007 do), it already runs parts that meet the current requirements of Windows 7. If the computer runs Vista, it will run Windows 7.

For non-Vista systems you can download the Upgrade Advisor to see if your computer qualifies. To run Windows 7 your computer must have the following:

**A processor rated at 1 Gigahertz or faster**
Even if you bought a computer in 2003, when the first batch of Pentium M processors (codenamed "Banias") came out, Windows 7 appears to have it covered as well, as long as you have at least 1GB of memory, 16GB of hard drive space, and a DX9 graphics card.

**1GB of RAM (2GB for 64-bit Windows 7)**
More memory doesn't hurt either, especially with older computers that ship with 512MB. Memory modules are inexpensive, easily accessible, and can mean the difference between a clunker and Windows 7 bliss.

**At least 16GB of storage space (20GB for 64-bit Windows 7)**

**A DX9-compatible graphics card, with the WDDM 1.0 driver**
A computer with an ATI or nVidia chipset is a really good sign that it'll run Windows 7, but make sure you have the latest graphics driver handy. Windows 7 has native driver support for legacy nVidia and ATI cards. Updated drivers are just a precautionary step.
Even computers going back 5 or 6 years can run Windows 7, and simple hardware upgrades can be made to ensure an optimal user experience. If your computer can't run Windows 7, it probably belongs in a museum. Things get a little hairy with computers that venture past the 6-year mark—that's when you're dealing with Pentium II and III chips that are probably not worth the hassle.

**If you do decide on an upgrade to an existing machine, be aware that you can only upgrade a computer currently running Vista. A computer running XP will need to have the hard drive formatted followed by a clean install of the operating system and a reinstallation of any programs.**

Thanks to PC Magazine for most of this info - RHJ

**Answers to Your Horticulture Questions**
**By Toby Day**
More than 25 Extension agents, administrators and specialists made the trek to Portland for the 94th Annual Meeting and Professional Improvement Conference (AM/PIC) through the National Association of County Agricultural Agents (NACAA) in Portland, Oregon September 20-24. The conference was attended by nearly 1,150 Extension professionals from all over the U.S. and was held at the Portland Conference Center near Downtown Portland.

*NACAA attendees from Montana and Wyoming*

*Water runoff becomes an art form in much of Portland*


*Bobbie Roos, Ravalli County Ag Agent serves BBQ at the Taste of the West dinner*

Montana and Wyoming hosted the "Taste of the West" dinner to the attendees on Sunday, September 20th to kick off the

conference. There was a poster session, trade show, several professional development seminars, programs and committee meetings on varying issues, research and programming for Ag agents and specialists. It was beneficial for me to go to Portland because of the vast information on horticulture and Master Gardener programming and research. At one time, there were 5 concurrent sessions on varying topics from horticulture and Master Gardener. It made it difficult to choose a subject.

From a "Taste of Technology" seminar to learning about a blackberry enterprise (the real ones you eat) in Lanier County, the conference was an enjoyable experience. Following the conference, attendees could take one of the 26 tours that were offered through NACAA. I went on the Sustainability tour of downtown Portland and learned quite a bit about water retention and LEED certified sustainable building.. Portland seems to be far ahead of the rest of the nation on sustainability practices.

**Recipes of the Month**

Apple Stuffed Pumpkins
Contributed by Mareike Johnston
Small pumpkins also can be stuffed and baked like apples. Cut the top off a 4-5 pound pumpkin and reserve the lid. Scrape out the seeds and strings. Brush the inside of the pumpkins with melted butter and sprinkle with 2 T. brown sugar. Replace the lid and place the pumpkin in a shallow roasting pan. Bake 375 degrees oven for 20 minutes.

In a medium bowl, mix 4 to 5 cups sliced, peeled apples, ½ cup heavy whipping cream, ¾ cup raisins, ⅓ cup brown sugar, 4 t all purpose flour, 1t cinnamon and ½ t nutmeg.

Spoon mixture into the pumpkin and replace the lid. Return to oven and bake for 90 minutes. Remove the lid and bake for 15 minutes or until the pumpkin and apples are tender. Serve hot, scooping out the pumpkin flesh with apple filling.

Honey-Grilled Pumpkin Slices
Contributed by Cheryl Moore-Gough
A super side dish to accompany roasted or grilled meat.

One 2-lb. cooking pumpkin – seeded and cut into 1 inch wide slices
½ cup butter, melted
1 tsp salt
1 tsp freshly ground black pepper
2 T honey
2 T Dijon mustard

Steam pumpkin slices until tender when pierced with fork or knife, about 15 minutes. Dip slices in butter and place on a baking sheet. Sprinkle with salt and pepper. Blend honey and mustard together into a paste.

Grill over medium-hot fire for 2 to 3 minutes on one side. Turn and baste with honey and mustard. Grill for 2 or 3 minutes more, then turn and baste again. Cook until lightly golden on the bottom, 1 or 2 minutes. Turn and grill until lightly golden, 1 or 2 minutes.

Yield about 15 slices – serves 6 as a side dish.

**October Birthdays**

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|---|---|
| Crystal Maier | 2 |
| Hope Talbert | 5 |
| Florence Dunkel | 10 |
| Zhonghai Ren | 10 |
| Bob Sharrock | 11 |
| Joanna Gress | 13 |
| Jamie Sherman | 20 |
| David Parrott | 27 |
| Peng Liu | 31 |