

Vol. 11, Number 10

Made In Montana Holiday Gift Bags

If you would like to send someone a holiday gift bag full of items made in Montana, please see the last two pages of this newsletter. The bags come in three different sizes and can be picked up, delivered, or shipped.

Hopping Along.... By the Blake Lab

With a heroic effort from Stan Bates, student helpers Kelly Thornsberry, Dawn McKay, Jen Holfeld and Chris Schafer, our new lab technician Duke Pauli, and other recruited help, we're making excellent progress toward having a hopyard ready for planting at the Hort farm in 2009. The hopyard is adjacent to the road to the Oscar Thomas Nutrition Center and easily viewed from Garfield Street, just west of 19th Avenue. Sixteen foot poles, buried in three foot holes reinforced by concrete support the trellis structure and ¹/₂ inch cable will form the overhead trellis grid. This height may be optimistic for hop growth in our short growing season, but we remain hopeful that the long Montana days in the summer will allow the hops to reach their potential. In addition to the traditional hop



Cabling the hopyard at the Hort farm

trellis, we will install small trellising systems appropriate for a backyard scale next spring, and welcome ideas for novel trellising from students, staff and faculty.

Germplasm was acquired from the National Clonal Germplasm Repository (NCGR) in Corvallis, Oregon and we are busy propagating clones in the PGC to plant next spring. The initial cultivars we will plant are Cascade, Fuggles, Northern Brewer, Mt Hood, Aromet, Swiss Tetnanger, Hallertauer and a *Humulus lupulus* wild species. As it turns out, propagating hops could not be easier. We had a clue when a stem of Cascade, accidentally severed from a plant in a backyard produced long healthy roots in a



len Holfeld propagating hops in the PGC

week in just water and a paper towel wick. All one has to do is cut the stem, just above a node of opposite leaves, cut about 2 inches lower in the internode, dip the end in Rootone, plant in soil and invert a clear object (Magenta box, beaker, plastic bag?) over them for a few weeks to keep hydrated. Adventitious roots form and auxiliary buds pop out in 3-4 weeks. We plan to have this hopyard available for any type of research from physiology, crop production and trellis design. Please contact Victoria Blake at <u>vblake@montana.edu</u> with your ideas, and visit the Montana Hops Resource webpage at http://hordeum.oscs.montana.edu/hops.

Bullish on SeedStocks...... The one that Won't Crash By Bill Grey

Pure seedstocks will grow when given proper care and investment, which is a lot more than can be said for the Wall Street Stocks. On an investor's note, over



these three years, our clients, and that means you the Montana Seed Growers, have sustained our sales of foundation seed at roughly 1000 bu winter wheat, 1000 bu spring wheat, 700 cwt of barley and 200 cwt of forage/hulled wheats. We appreciate your support of MSU breeders and the Montana foundation seedstocks, as I hope it will continue to be a solid investment for your business.

The prospects of MSU having a public "traded" (remaining with the market theme) malt barley are quickly becoming reality. Pending the successful taste test this fall and an approval by Amer. Malt Barley Assoc., Hockett will be worth watching on the seedstock market. The performance has been highly favorable under dryland conditions with consistent plump kernels and high yields. Another stock of interest and a year from release, is a hard red winter wheat from Phil Bruckner, MT0552. It has performed well under winter kill conditions and is resistant to the prevalent stem rust race. We are testing MT0552 in cooperation with NDSU at the notorious environment of Williston, ND. Many of you noticed that MFSP prices saw a 23-25% increase this fall. Basically, this will cover our costs for fuel, fertilizer and herbicides. We are highly dependent on the dedicated staff at the MSU Research Centers to provide this valuable service and maintain high quality, pure seed standards. MFSP is

using their labor, land and facilities to raise foundation seed and the seed sales support the centers' operations. MSFP has responded to your request that we package seed in the larger, baffle-type tote. This is an efficient method of handling seed and it does reduce our losses from damaged bags. If you still prefer the individual bushel bags, let us know on your application. We have also reduced the varieties and inventory that we keep on hand. If there is a unique or former variety, we can contract for that production and will require a deposit.

Visit the Montana Foundation web page for a link to "Small Grain QuickFacts" for Vida, Choteau, Outlook, Genou and Yellowstone. http://plantsciences.montana.edu/Foundation Seed/

2008 Fall seedstocks allocation: Frank winter spelt, 40.0 cwt. Genou, HRW, 362 bu. Yellowstone, HRW, 607 bu. Willow Creek, forage wheat, 80 bu.

NORTH AMERICAN MYCOLOGICAL SOCIETY MEETING & FORAY 2008 By Cathy Cripps

The 2008 North American Mycological Society met Sept. 3-7th in McCall, Idaho for the Western Orson Miller NAMA Foray. McCall is where renowned mycologist Orson K. Miller, Jr. retired after 42 years as a mycologist for the Forest Service and at Virginia Polytechnic Institute (32 years). His wife Hope still resides in this beautiful town surrounded by forests and lakes where mushrooms abound. The event was sponsored by the Southern Idaho Mycological Society, a group with which Orson was deeply involved before his untimely death from a brain tumor in 2006. Over 150 participants attended the conference, and they came from all over the USA to collect mushrooms, hear presentations on fungi, take part in a variety of events and celebrate Orson's life. Rains just before the conference brought out guite an array of fungi, some of which had not been collected for over 40 years!



I was pleased to be selected as the first female Chief Mycologist (except for Gulden from Norway) for almost 50 years of NAMA forays. However, this entailed forgoing field

trips and staying inside near the microscopes and literature to identify as many of the mushrooms being brought in by the foragers as possible —and mushrooms were literally brought in by the bushel basket load! I was able to invite and assemble an ace team of identifiers that included Vera Evenson (Denver Botanical Garden, Hebeloma), Dr. Micheal Beug (Evergreen College, Clavariaceae), Walt Sundberg (Southern Illinois University, Lepiotaceae), Tom Volk (Wisconsin, Polypores), Jessie Glazier (USFS Wood Products Lab, Madison, Wisc), Dr. Jean Lodge (USFS Puerto Rico, Hygrophoraceae), Dr. Steve Miller (University of Wyoming, Russulaceae), Dr. Pat Leacock (Chicago Field Museum, Lactarius), Rod Tulloss (Amanitaceae), Dr. Steve Trudell (University of Washington, Fleshy Fungi), Dr. Roger Rosentretter (BLM, Idaho, lichens), Linnea Gillman (Colorado Club) and local expert Dr.



Incoming mushrooms

Robert Chehey (SIMA, Boise State). Three graduate students received fellowships to the event including our own Jeff Cameron (who received his M.S. degree from PSPP in Bob Sharrock's lab). Jeff took my mycology course at that time and has since developed a strong interest in mushrooms and fungi. He is



Dr. Tom Volk and Jeff Cameron

currently working on his PhD at George Washington University in St. Louis examining a variety of biological systems at a molecular level using microarray technology. The team from the Chicago Field Museum served as the voucher committee and as specimens were identified, names and data were entered into the NAMA database, specimens were photographed and dried as vouchers, and subsequently sent to the fungal herbarium at the Chicago Field Museum. The unofficial total of species is currently at 285 and late identifications will come in for specimens taken home by mycologists for study. The NAMA voucher collection now consists of hundreds of collections from across the country and biogeographic patterns are beginning to emerge. We added many new species to the list.

In addition to the scientific aspects of fungal specimens, edible mushrooms were in great supply with giant *Boletus edulis* (king bolete) being collected by the basket load. Other edibles included *Cortinarius caperatum*, once called *Rozites* but renamed after phylogenetic DNA studies, but it is still just as tasty. Numerous species of *Suillus*, including the larch associates *Suillus cavipes* and *Suillus grevillei* were brought in. The "cook and taste" session included a lovely chanterelle soup, dried morel casserole, fried shaggy manes, an *Albatrellus* medley, and sautéed *Rozites* with parmesan cheese.

A highlight was the plethora of Giant Fungi that included: *Albatrellus (ovinus, flettii and ellisii), Catathelesma ventricosa, Leucopaxillus (albissimus and gentianus), Calvatia booniana* (giant western puffball, bigger than a football), western *Cortinarius sp.* big enough to be footstools, and beautiful collections of dinner-plate sized, orange-capped "*Amanita ameri-muscaria*" (soon to be formally described and split off from *A. muscaria*). I quipped that "Maybe fungi, like potatoes, grow bigger in Idaho!" However, this did cause us headaches, since space was limited on our display tables.

Numerous talks were given by mycologists, both amateur and professional on a wide range of topics including: Rosentretter's "Diets of Flying Squirrels", Steve Miller's "Russulas", Tom Volk's "Wood Decay Fungi" and Steve Trudell's on "Fungal Biodiversity in form and function". I presented on local "Fungi in the Forest Ecosystems" using information from my many seasons of collecting with both Orson and SIMA. This included many of the new species from Idaho named by Orson. Participants had to choose between hearing talks and attending forays, often a difficult choice!

Amateur and professional mycologists from around the country came not only to hunt and share information, but to honor one of their own...the late and much beloved Dr. Orson Miller. Friday evening was set aside to celebrate his life, with Orson's wife Hope and daughter Ginny in attendance. Many of Orson's students, colleagues, and friends came together to celebrate the man who wrote the first color field guide for the USA "Mushrooms of North America" (considered a mycological milestone), and who also mentored 27 graduate students, many of whom are mycologists today spread around 15 states. He also published 8 books, the last in 2006 just months before his death. I had the honor of editing this last contribution. Orson published over 160 scientific papers,

gave over 400 talks (about 1/month over 40 years), and contributed greatly to the liaison between amateur and professional mycologists. His broad reach to so many people, in so many countries, did much to promote mycology throughout the world. So when I asked the 150 people present Friday night to indicate how many had been influenced by Orson, I should not have been surprised when almost every hand went up. Most in the room had traveled to Idaho in honor of Orson. I was privileged to lead the group with a presentation on what Orson had taught us. For me and many others it was Orson's uncanny ability to give just the essential features of a mushroom that would make it recognizable in the future which we appreciated most. His method of "leading students down the garden path" was a deliberate philosophy that I use in my mycology class today. The large spectacular fleshy fungi are addressed first, and we ease into the brutal Pyrenomycetes and Loculoascomycetes later in the course. Others followed the lead, and with a roving microphone we were in tears and laughter for an evening of feting Orson.



On Saturday night, an auction netted over \$5,000 for the Mycological Society of America Orson Miller Mentor Travel Award used for graduate

Hope Miller accepting award for Orson

students to attend professional meetings. Items included baskets of wine and cheese, dried wild mushrooms, mushroom jewelry, books, and a mushroom-patterned quilt made by Hope Miller (auctioned at over \$2,000). I led the team of mycologists in the final Sunday morning wrap-up which consisted of moving around the mushroom display tables and giving information on interesting species and groups at a rapid rate. This went on for several hours, and was quite a challenge after identifying so many fungal species in just a few days. My brain was like a jelly fungus at that point, but many people stayed until the bitter end to glean every bit of information on their fungal finds. Results will enhance the NAMA list and our "Checklist of Columbia River Basin Fungi" (Miller, Miller & Cripps 1994-2006). Orson would have been pleased with the success of this mycological endeavor that united professionals, amateur mycologists, students, young and the old, those from the East and West...all on his home turf. For me it was a lifetime event.

E-Lessons by Bill Dyer

Bill Dyer wrote two new eLessons for PSPP 546 Herbicide Physiology, an online graduate course offered through the MSU Extended University, Office of Continuing Education. This course has been taught three times, and this year, PSPP grad students Mary Lollis, Brekke Petersen, and Stan Bates are taking the course along with 13 other graduate students and professionals from around the country.

The eLessons are part of a large database of online lessons covering many agriculturerelated topics including genetics, crop production, horticulture, soil science, and pesticide science. The site is hosted at the University of Nebraska-Lincoln, who has received several distance-education awards. All lessons and their associated quizzes are freely available. See <u>http://plantandsoil.unl.edu/</u> for more information.

Both eLessons were published in the Journal of Natural Resources and Life Sciences Education, where the American Society of Agronomy chose them as featured articles for the months of August and September.

http://esciencenews.com/articles/2008/09/08 /how.are.herbicides.discovered

http://www.jnrlse.org/pdf/2008/web-lessons-2008.pdf

https://www.soils.org/press/releases/2008/08 11/180/

Chicago Marathon - Oct. 12, 2008 By Tracy Dougher

A recent medical study showed that our peers and family strongly affect our level of fitness. I have to say that living in Bozeman and working with PSPP and LRES folks has certainly influenced our level of fitness. When your friends are top finishers in the Ridge Run, are King & Queen of the Ridge, accomplished at Aikido and frequently cross country ski great distances AND you live down the street from Scott Creel, you can't help but think that maybe you should get off the couch too.

Frank and I have been "running" for about four years now. We have run a couple halfmarathons, but decided we needed a bigger goal. So, we grabbed a couple of friends, Thais Riley (former PSPP MS student) and Irene Grimberg (wife of Fabian Menalled) and



on Oct 12, we participated in one of the world's top 5 marathons, the Chicago Marathon. We chose this race because it is in our home state, a flat course (no more than 24 feet elevation change), tours through 29 Chicago neighborhoods with avid fans and bands cheering racers on, and has the most participants. 45,000 people signed up, 35,000 made it to the starting line and 31,000 finished (puts us in an elite crowd already, right?). Running with 31,000 people was amazing. The crowd never disappeared; we were always surrounded by other runners. The day got hot and the race warning level started at yellow and went to red, but the organizers were prepared this year and there

was plenty of water and misters (I think I ran through every one of them). All four of us made our goal....finishing! I managed to finish in 4:50 (Frank will not allow me to divulge his time). Immediately following the race we decided that we didn't have to do THAT again. However, as the days wear on and our sore muscles are healing, we are talking about our next marathon. I think we are hooked.





I did manage to do a bit of work in Chicago. Our lodging accommodations overlooked Millennium and Grant Parks which are full of gardens, rooftop gardens, a welltended 'Great Lawn'. The lawn

will hold 7,000 people and holds up to incredible foot traffic. I just had to inspect it closely.



I also visited one of our students, Corri Pfeiffenberger, who is interning for the year at the Chicago Botanic Gardens. Corri gave us an insider's tour of the gardens. Overall it was a spectacular weekend (and if you want a longer story about what a small world we live in.... Josephine Rodrigo sends a 'hello' to Mike Ivie).

New Graduate Student Jean Allen



Hello! Allow me to introduce myself; I'm Jean, and I'm a graduate student in Dr. Wanner's Lab. I am from Las Cruces, New Mexico, and I earned my B.S. in Agriculture at New Mexico State University in 2001. After graduating, I worked as a Greenhouse Manager at

Best Friends Animal Society in Kanab, Utah, and then as a Research Technician in molecular plant pathology at New Mexico State University. How I came to live in Bozeman is a longer story than I can recount here, but I have been here taking courses, teaching, and doing research since 2005. Some of you may also recognize me from Cashman Nursery, where I have enjoyed working since the spring of 2007. Now, I am here in the PSPP Department (Where I should have been all along!) working with Dr. Wanner to identify and characterize pheromone receptors in the European corn borer moth. I look forward to working with all of you who are fellow enthusiasts of plants, bugs, soil, and microbes!

Katie Hopp Receives MS Degree

Katie Hopp, Mike Ivie's grad student, received her MS degree in Entomology on 10/1/08. She will be moving to Santa Barbara and is looking for a position in science education/outreach. Congratulations Katie!

Publications

Mitchell, A.M., <u>Strobel, G.A.</u>, Hess, W.M., Vargas, P.N., and Ezra, D. (2008) *Muscodor crispans*, a novel endophyte from *Ananas ananassoides* in the Bolivian Amazon. Fungal Diversity. 31: 37-43. Smith, S.A., Tank, D.C., Boulanger, L.A., Bascom-Slack, C.A., Eisenman, K., Babbs, B., Fenn, K., Greene, J. S., Hann, B.D., Keehner, J., Kelley-Swift, E.G., Kembaiyan, V., Lee, S.J., Li, P., Light, D.Y., Lin, E.H., Ma, C., Moore, E., Schorn, M.A., Vekhter, D., Nunez, P.N., <u>Strobel, G.</u>, Donoghue, M.J. and Strobel, S.A. Bioactive endophytes support intensified exploration and conservation PloS 1 biology Published on –line August 25, 2008.

<u>Strobel, G.</u>, Knighton, B., Kluck, K., Ren, Y., Livinghouse, T., Griffen, M., Spakowicz, D., and Sears, J. (2008) The production of mycodiesel hydrocarbons and their derivatives by the endophytic fungus *Gliocladium roseum*. *Microbiology* 154: 3319-3328.

Patents

Gary Strobel

MONT-098/00US (60/984,234) - Covers the Gliocladium Isolate MONT-098/01US (61/085,172) - Builds upon the MONT-098/00US application MONT-098/02US (61/096,913) - Adds disclosure of Ascocoryne (Builds upon the MONT-098/01US application) MONT-099/00US (60/986,609) - Covers the Cloned Nucleotides

How Long Will Pumpkins Last? By Cheryl Moore-Gough



There are many factors involved in the shelf-life of pumpkins, so answering this simple question is actually very difficult. Pumpkins that have been cured properly, have no bruises or other damaged areas, and have their handles intact, should keep for 60 to

90 days when stored at temperatures between 50° and 60° F and a relative humidity of 60%, like in the crawl space of many homes. For prolonged storage the fruit are best placed on slotted shelves to provide for free air circulation and minimum contact between adjacent fruit. Proper curing is so important, not only for pumpkins but for winter squash as well. Of course, it's too late this year, but here's how to do it next year. Both pumpkins and squash are sensitive to chilling. Harvest the fruit after the rind has hardened but before a heavy frost. Fruit that feel heavy for their size are better than lightweights, which tend to be stringy. Hold your best fruit between 60° and 70°F for one week after harvest, then drop the temperature below 60° F for storage. The warm post-harvest temperatures allow wounds to cork over and heal to prolong the storage life.

Halloween pumpkins left on the doorstep until now are usually frost damaged. They won't keep and will probably have developed some off-flavors by now. It'd be best to discard them. Also, while the storage suggestions above work for winter squash, they will not work for summer squash. You can't cure and store zucchini and patty pan and crookneck as you do butternut and buttercup they rot.

If you're looking for something to do with all those pumpkins you grew, why not try a Colonial pumpkin pie? Cut a pumpkin in half and hollow it out. Prick the skin all over. Fill it with chopped apples, raisins, and nuts. Add some milk, pumpkin pie spices and brown sugar. Dot with butter and replace the 'lid'. Bake until the pumpkin is soft and apples are done.

Bob's Byte

By Bob Johnston (Irene Decker filling in) Phone Numbers for Businesses

This is something you will want to have and use! I still remember when the telephone company charged me \$1.50 to get a phone number from information!



Just leave it up to <u>Google</u> to come up with something like this!!!

Here's a number worth putting in your cell phone, or your home phone speed dial: 1-800-goog411. This is an awesome service from Google, and it's free -- great when you are on the road. Don't waste your money on information calls and don't waste your time manually dialing the number. I am driving along in my car and I need to call the golf course and I don't know the number. I hit the speed dial for information that I have programmed. The voice at the other end says, 'City & State.' I say, 'Garland , Texas' He says, 'Business, Name or Type of Service.' I say, Firewheel Golf Course.' He says, 'Connecting' and Firewheel answers the phone. How great is that? This is nationwide and it is absolutely free!

Click on the link below and watch the short clip for a quick demonstration. <u>http://www.google.com/goog411/</u>

Recipe of the Month Slow Cooker Thanksgiving Turkey

5 slices bacon 1 51/2 pound bone-in turkey breast, skin removed

1/2 t garlic pepper

1 (10.5 oz) can turkey gravy

2 T flour

1 T Worcestershire

1 t dried sage

Place bacon in a skillet over medium-high heat, and cook until evenly brown. Drain and crumble.

Spray a slow cooker with cooking spray. Place turkey in slow cooker. Season with garlic pepper. In a bowl, mix the bacon, gravy, flour, Worcestershire sauce, and sage. Pour over turkey in the slow cooker. Put cover on slow cooker and cook for 8 hours.

November Birthdays

Carli Lofing	4
Jim Berg	4
Harvey TeSlaa	15
Emby Davich	16
Leila Feiz	17
Yuhao Ren	20
Adam Richman	22



Following are a few pictures from Cheryl Moore Gough's farewell party.









Give a gift of Montana this Holiday Season!

...and put more of your holiday gift dollars into the hands of Montana's farmers, ranchers, and small food businesses.



Towne's Harvest Local Gift Bags & Boxes!

Duplicate this form as needed. Please use a separate form for each gift ordered.

Contact information for the person ordering:	Shipping information:
Name	Name
Address	Address
Telephone	Telephone
E-mail	E-mail

Choose one delivery method*

Pick-up behind Herrick Hall on December 15, 5-7pm: (FREE)

Local Delivery in Bozeman during the week of Dec. 15-19th (\$5)

Shipped Priority Mail on December 12 (\$10 for box; \$12 for bags)

*You will be notified by postcard when your gift has been shipped or delivered.

Choose one gift option:



MSU Friends of Local Foods

Local Food Gift Box	Local Food Gift Bag	Deluxe Local Food Gift Bag
\$ 40	\$ 70 (includes locally printed canvas tote bag)	\$ 120 (includes locally printed canvas tote bag)
 Contents: Personal Holiday Greeting King's Cupboard Hot Chocolate, Red Lodge Cream of the West 7 Grain Cereal, Harlowton Cooks Honey, Bozeman High Country Beef Jerky, Lincoln Dutch Brothers Cookie Waffles, Billings 	Contents: Personal Holiday Greeting King's Cupboard Hot Chocolate, Red Lodge Cream of the West 7 Grain Cereal, Harlowton Cooks Honey, Bozeman High Country Beef Jerky, Lincoln Dutch Brothers Cookie Waffles, Billings MT Coffee Traders Coffee, Whitefish Western Trail Foods Barley Cereal, Glendive Larchwood Farms Huckleberry Jam, Trout Creek Fisher Spices, Bozeman Timeless Natural Food Organic Lentils, Conrad Montana Monster Munchies Cookies, Bozeman	Contents: Personal Holiday Greeting King's Cupboard Hot Chocolate, Red Lodge Cream of the West 7 Grain Cereal, Harlowton Cooks Honey, Bozeman High Country Beef Jerky, Lincoln Dutch Brothers Cookie Waffles, Billings MT Coffee Traders Coffee, Whitefish Western Trail Foods Barley Cereal, Glendive Larchwood Farms Huckleberry Jam, Trout Creek Fisher Spices, Bozeman Timeless Natural Food Organic Lentils, Conrad Montana Tea & Spice Trading Tea, Missoula Mountain View Naturals Soap, Three Forks Bequet Caramels, Bozeman The Montana Food Guide Towne's Harvest Vegetable Greeting Cards

About The Montana Food Guide: A Companion Resource for Seekers of Locally, Sustainably, & Educationally Grown Foods. This is the essential resource for helping Montanans find local food, plan and prepare meals using local foods, and eat a nutritious balanced diet year round. Recipes included!

Your personalized	holiday	greeting:
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Special instructions related to your gift:

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ORDERS MUST BE RECEIVED BY NOVEMBER 21st.

**If you would like to order Towne's Harvest Vegetable Greeting Cards (\$10) or The Montana Food Guide (\$25) separately, please contact us at msu.flf@gmail.com