Plant Science Says

Merry Christmas!

December, 2004

Annual Christmas Party

The Departmental Christmas party will be on Sunday, December 12 from 4-8 p.m. at Country Lanes (go west out of town for about 4 miles-it will be on your left; if you go down a hill, you have gone too far). Following is the schedule of events:

Bowling	4-6
Dinner	6-7
Santa	7-7:30
Cleanup	7:30-8

Please bring one of the following share: Hors d'oeuvres, a vegetable or potato dish, salad or dessert. The meat, rolls, and drinks (non-alcoholic) will be provided. Please join us for any or all of the above.

Intermountain Native Plant Summit
by Tracy Dougher

I attended the 3rd Intermountain Native Plant Summit at Boise State University (home of "smurf turf") November 3 & 4. The INPS was formed to bring together native plant seed producers, native plant growers, government agencies, and university faculty to discuss regulations and practices of growing and distributing native plants. Registration for this meeting was free thanks to several grants and a Boise State University outreach program. Presentation topics included seeds & seed production, rangelands and restoration, genetics and adaptation, native plant evaluation, native plant applications, and a plant materials forum. I presented a poster on Toby Day's graduate work on "Evaluation of Intermountain West Native and Adapted Grass Species and Their Management for Turfgrass Applications". This work is being done in conjunction with Paul Johnson & Kelly Kopp at Utah State University and Mark Majerus at USDA-NRCS Plant Materials Center in Bridger, MT. Many seed producers are anxious to learn the outcome of this research, as this would generate a new market for their native grass seeds. Most native grass seed producers have government contracts whose seed demand changes greatly from year to year. The summit was a tribute to MSU's graduate program as several graduates were moderators and presenters, including Jane Mangold - USDA-ARS in Burns, OR, Dan Ogle – USDA-NCRS Boise, ID, and Mark Stannard – USDA-NRCS Pullman, WA.

ASA and SSSA Meetings
By Tom Allen

Catlyn Swan and I attended the ASA (Agronomy Society of America)- CSSA (Crop Science Society of America)- and SSSA (Soil Science Society of America) meeting in Seattle Oct. 31 – Nov. 4. This joint meeting attracts over 4000 scientists from over 40 countries. This year the meeting was held in conjunction with the Canadian Society of Soil Science. Catlyn presented a poster on her research with pirolindolines and ruminant digestion, while I presented a poster on my research with the reseeding of winterkilled winter wheat. Also attending from MSU were several people from LRES, Dennis Cash from Animal and Range Sciences, and faculty from the Research Centers.

Student From Summer Biotech Course Wins Award

It is interesting that humans, grasshoppers, rodents and deer all require the same essential amino acids. They cannot make them in their bodies; they

have to get them in their food. It is also interesting to note that the other species are far better than humans in selecting foods for their nutritional value. For example, grasshoppers' hopping seems to have to do with their need for balanced nutrition. They will find the plants that contain the nutrients that they need.

Denton graduate Linsee Nemec set up an experiment for her Future Farmers of America (FFA) research project to show that when the L-form of lysine was added to plants through their roots, the insects preferred those plants over others.

In Nemec's experiment, the essential amino acid l-lysine was applied, in solution, to the roots of the plants. The l-lysine went to the tops of the plants within a matter of hours, and the grasshoppers became grass-eaters, heavily preferring the plants with high lysine over plants with lower lysine content.

Nemec, daughter of ranchers Patty and Lon Nemec of Coffee Creek, completed the two-year experiment and this fall it placed second in the nation in the environmental science division of the 2004 national competition. She received her award at the National FFA Convention in Louisville, Ky., at the end of October. Nemec was still an eligible contender in the 2004 competition because she graduated from Denton High School just last spring. She won the trip to Louisville by earning top honors for her project in the statewide competition. Top state winners and other FFA members (53,000 of them) from every state converged in Louisville for FFA's annual convention.

Nemec worked with David Sands, bacteriologist in the Department of Plant Sciences and Plant Pathology at MSU in Bozeman, to set up the experiment and track the results over the past two years. Her application was one of very few chosen for Sands' summer program, from applications submitted by high school students in many states.

The results of Nemec's study supported her hypothesis that grasshoppers would distinguish between low-lysine and high-lysine plants, and would eat more of the high-lysine plants. When grasshoppers find plants containing the nutrients they need, they stop hopping and commence eating.

"If the grasshoppers become grass-stayers, then highly nutritious plants such as high-lysine wheat can be used as a trap-crop where insecticides or biological controls can be used, thus reducing the cost of (insect) control," said Sands.

Dave Wichman of the Central Agricultural Research Center at Moccasin agreed that the findings of practical studies such as Nemec's can lead to real benefits for grain and forage growers. Wichman noted the possibility of other ecological benefits as well: if less acreage is treated chemically – or more specifically, if there is less misuse of chemical sprays – it can help protect food sources for small birds and wildlife.

Linsee Nemec set up an experiment for her FFA research project to show that when the L-form of lysine was added to plants through their roots, the insects preferred those plants over others. This raises an interesting question: Are plant breeders inadvertently selecting low-nutrition plants as they are selecting for insect resistance?

The larger issue to which Nemec's pivotal study points has everything to do with nutrition for humans, according to Dave Sands, professor in the Department of Plant Sciences and Plant Pathology at MSU in Bozeman.

Specifics of human nutrition have been largely ignored until recent increases in diabetes and obesity in the American population have hit home, said Sands. Now, researchers are paying more attention to plant varieties that will provide the nutrients that people need. Methods for measuring nutrient levels are becoming more readily available as people's understanding of human nutrition grows. For example, Sands expects that

consumers will demand foods that contain starches that diabetics can eat, or foods that contain enzymes which protect against inflammation such as arthritis.

"Perhaps, for the first time, crop yields will become less important than their nutritional value," Sands said. "Yields won't be as high with high-nutrient plants because of predation from insects and rodents."

Nemec's study leads to questions for further research. If weeds are sprayed with lysine, would insects eat them?

By the time baby chicks are three days old, Sands said, they can differentiate between feed that contains lysine and feed that does not. If you eat meat, you likely have plenty of lysine, and may not have the receptors for it. Vegetables tend to be low in lysine. So, can people on vegetarian diets taste lysine? Whether humans can detect it is unknown.

It doesn't take huge amounts of training to do interesting work in plant biology. Professor Sands said if you ask the right question, the field is wide open.

Schedule of MAES Presentations

Barry Jacobsen 12/7 2:30 108 ABS
"Ecology of phyllosphere and rhizosphere and their potential role in biological control of disease"

Grants

Bill Dyer, "Mechanism of dicamba resistance in *Kochia scoparia*" USDA/NRICGP.

Papers Published

Jacobsen, B.J., 2004. Sugarbeets p. 52 in Encyclopedia of the Great Plains. Univ. of Nebraska Press 940 .

Jacobsen, B.J., *N.K. Zidack* and B. Larson. 2004. The role of Bacillus-based biological control agents in integrated pest management systems. Phytopathology 94: 1272-1275.

Delgado-Salinas, A., and M. Lavin. 2004. (1639-1640) Proposals to change the conserved type of *Phaseolus helvolus*, nom. cons. and to conserve the name *Glycine umbellata* with a conserved type (Fabaceae). Taxon 53 (3): 839-841.

Lavin, M., B. D. Schrire, G. Lewis, R. T. Pennington, A. Delgado-Salinas, M. Thulin, C. E. Hughes, A. Beyra-Matos, and M. F. Wojciechowski. 2004. Metacommunity processes rather than continental tectonic history better explain geographically structured phylogenies in legumes. Philosophical Transactions of the Royal Society, Biological Series 359 (1450): 1509-1522.

Thulin, M., M. Lavin, R. Pasquet, and A. Delgado-Salinas. 2004. Phylogeny and biogeography of *Wajira* (Leguminosae): a monophyletic segregate of *Vigna* centered in the Horn of Africa region. Systematic Botany 29 (4): 903-920.

Wojciechowski, M. F., M. Lavin, and M. J. Sanderson. 2004. A phylogeny of legumes (Leguminosae) based on analysis of the plastid *matK* gene resolves many well-supported subclades within the family. American Journal of Botany 91: 1846-1862.

Mickelson, J.A., A.J. Bussan, E.S. Davis, A.G. Hulting, and W.E. Dyer. 2004. Postharvest kochia (*Kochia scoparia*) management with herbicides in small grains. Weed Technol. 18:426-431.

Strobel, G.A. 2003. Bioactive Compounds from Endophytic Microbes. Yemen Science Conference Proceedings, Seiyun, Yemen, p. 3-12

Strobel, G., D. Ezra, U. Castilo, W.M Hess. 2004. A question concerning the identity of Streptomyces MSU 2110. Microbiology. 150: 3094-3096.

Browne, L., U. Castillo, E. Ford, D. Ezra, A.S. Suliman, W.M. Hess and G.A. Strobel. 2004. Some endophytic microorganisms from Socotra Island (Republic of Yemen).Yemeni J. of Science. 6: 47-57.

Strobel, G.A. 2004. Microbial Diversity and Bioprospecting, ed. Alan T. Bull, ASM Press, Washington, D.C., 2004. 496p. Quarterly Review of Biology. 79: 309-310.

Banowetz, G. M., K. P. Dierksen, M. D. Azevedo, and R.G. Stout (2004) Microplate quantification of plant leaf superoxide dismutases. **Analytical Biochemistry** 332:314-320.

Bob's Byte
By Bob Johnston
Search your own computer – Info supplied by Google.com

Google Desktop Search is how our brains would work if we had photographic memories. It's a desktop search application that provides full text search over your email, computer files, chats, and the web pages you've viewed. By making your computer searchable, Google Desktop Search puts your information easily within your

reach and frees you from having to manually organize your files, emails, and bookmarks.

After downloading Google Desktop Search, you can search your personal items as easily as you search the Internet using Google. Unlike traditional computer search software that updates once a day, Google Desktop Search updates continually for most file types, so that when you receive a new email in Outlook, for example, you can search for it within seconds. The index of searchable information created by Desktop Search is stored on your own computer.

In addition to basic search, Google Desktop Search introduces new ways to access relevant and timely information. When you view a web page in Internet Explorer, Google Desktop Search "caches" or stores its content so that you can later look at that same version of the page, even if its live content has changed or you're offline. Google Desktop Search organizes email search results into conversations, so that all email messages in the same thread are grouped into a single search result.

Note: Google Desktop Search is currently available for Windows XP and Windows 2000 Service Pack 3 and above

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Click on Google downloads
Select Google desktop search to install the program.

Are living Christmas trees a good investment?
By Bob Gough

In today's ecologically-conscious society, many of us choose to purchase living Christmas trees. These not only give you holiday enjoyment, but add to your landscape as well. Living Christmas trees are highly regarded in warmer areas of the country, but how about here in the North? Are they a good idea?

Living Christmas trees are purchased either balled and burlapped or as container-grown plants. You can plant them after the holidays, but it's tricky and you'll have to make some preparations ahead of time. First, plan well ahead. Dig a planting hole larger than the tree's rootball before the soil freezes. Cover the hole and the soil you took out of it with at least six inches of leaves, and cover them both with plastic to keep the rain and snow out. If you haven't done this yet, it may be too late for this year. Keep the living tree in the house no more than a week. Longer than that and it might dry out or become active and begin to grow. In either case, it won't last long when planted outside. And don't let the trees sit around on the back porch after Christmas. The tree's roots are very sensitive to cold and can die if temperatures drop below about 15 degrees.

Plant it as soon after Christmas as possible, water it in very well and pull the leaf mulch over the planting area. Don't put fertilizer into the planting hole. Drive four stakes into the ground around the plant and wrap the plastic or burlap around them to block the wind, but be sure the wrap does not cover the tree or touch the branches. And remember...the tree is little now, but it can grow very large. Don't plant it too near the house.

December Birthdays

Ted Clack	3
Bill Grey	4
Kate Mohatt	5
Smita Sutrave	11
Cathy Seibert	21
Elena Kalinina	21
John Ansley	23
Cheryl Moore	23
Sue Brumfield	26
Tim Seipel	28
Dick Pohl	29
Lucy Cooke	30

Recipe of the Month

Green Salad with Cranberry Vinaigrette

1 cup sliced almonds
3 tablespoons red wine vinegar
1/3 cup olive oil
1/4 cup fresh cranberries
1 tablespoon Dijon mustard
1/2 teaspoon minced garlic
1/2 teaspoon salt
1/2 teaspoon ground black pepper
2 tablespoons water
1/2 red onion, thinly sliced
4 ounces crumbled blue cheese
1 pound mixed salad greens

Preheat oven to 375 degrees F (190 degrees C). Arrange almonds in a single layer on a baking sheet. Toast in oven for 5 minutes, or until nuts begin to brown.

In a blender or food processor, combine the vinegar, oil, cranberries, mustard, garlic, salt, pepper, and water.
Process until smooth.

In a large bowl, toss the almonds, onion, blue cheese, and greens with the vinegar mixture until evenly coated.

Dough Ornament Recipe
Decorative cookies. NOT EDIBLE! Makes 15 ornaments

4 cups all-purpose flour
1 cup salt
1/1/2 cups water

1. Preheat oven to 325 degrees F (165 degrees C).
2. Mix flour and salt well. Gradually add water, stirring with a large spoon. Finish mixing with hands. Knead until soft and pliable.
3. Roll out on floured surface about 1/8 inch thick.

Cut shapes with cookie cutters. Place on cookie sheets. With a toothpick make a hole in the top of the ornament for threading string. Bake at 325 degrees F (165 degrees C) until hard, about 1 hour. Decorate with paint and varnish to preserve.

Once again, it has been great working for all of you this year. We wish each of you a very Merry Christmas and a Happy New Year!

Bobby Bear
Melody Schimpf
Elaine Matlow
Irene Decker