Plant Science Days

October, 2002

Yousef Zadegan Joins the Faculty

Joining us from the University of Tennessee at Martin, Yousef arrived in Bozeman on Sept. 23 to teach landscape design. He will be teaching Landscape Graphics, Landscape Management and also Yousef's family currently resides in Winnipeg, Manitoba where his daughter Vida, 22, is attending the University of Manitoba (Science major). His son, Sina is a sophomore in high school. Yousef enjoys outdoor activities, traveling and especially cooking.

NSF EPSCoR National Conference
Anchorage Alaska – September 2002
by Angie Solvie

Why does EPSCoR have a biennial National Conference? Well, this was the question on my mind as a recent hire in the EPSCoR office. I found that there are many reasons that the 22 EPSCoR states gather. First and foremost, it serves as a way to communicate new federal initiatives that may be on the congressional agenda to project directors and administrative support. Secondly, presentations and posters of current science and technology research being done within our universities and the private business sector are shared.

Dave Gibson, Chuck Thompson, Mark Young and William Hiscock

Dr. Kathie Olsen, White House, Associate Director for Science, Office of Science and Technology, and former chief scientist spoke of the heightened importance of homeland security since the tragic events of 9-11. Dr. Joseph Danek, Executive Director of the EPSCoR Foundation asked that we rally the support of our state legislators, and extend our efforts to deliver the EPSCoR message to the general public about the importance of this state program. Our first effort to achieve this goal was by publishing our first NSF EPSCoR Newsletter. A big thank you to Kevin Eveland! We (or should I say MTA graduate student Tracy Graziano) are also in the process of editing a video we produced for the national conference, which will have a more commercialized appeal.

Dr. & Mrs. Gary Strobel with invited Montana legislator Dick Haines

Susie Couch – on the way to Seward Alaska

The last day of our trip, Susie Couch and I, along with University of Montana administrators Gay Allison and Rhonda Stoddard had the opportunity to take in some of

the beauty Alaska has to offer. We took a day boat tour from Seward, Alaska, to view the Holgate Glacier in the Kenai Fjord National Park. I was left speechless by this incredible sight. Seeing the ocean, mountains peaks, and glacier made it impossible to put the meaning of "grandeur" into perspective!

International Mycology Congress (IMC7) in Norway, and mushroom collecting on an Arctic Island (with polar bears, reindeer, glaciers, and the midnight sun)
by Cathy Cripps

Over 1000 mycologists, from 74 countries met in Oslo, Norway last August for the International Mycology Congress which meets every four years. Grad student Todd Osmundson, my husband and I had the opportunity to attend the meeting, and continue on to Svalbard, an island well inside the arctic circle (78^0 N) to collect mushrooms.

Oslo is a city of half a million people set on a fjord complete with sailboats, fishing vessels, ferries, and mammoth cruise ships. Surprisingly, southern Norway was experiencing a heatwave when we arrived, and our 'C' category hotel lacked air-conditioning. So did many of the symposia rooms at the University of Oslo where the convention took place. Temperatures hovered around 90 with 80% humidity and kept us washing the few light-weight clothes we'd packed. However, receptions in the stunning Major's Hall with 1000 years of Oslo history (including the Vikings), and at the Concert Hall near the harbor set a cool Nordic tone.

The main themes of IMC7 were Fungal Biodiversity and Conservation and Phylogeny of the Fungal Kingdom. The symposium on Arctic and Alpine Basidiomycetes (chaired by myself and past MSA president Dr. O.K. Miller, Jr.) was attended by around 200 people (despite the sweltering room). Arctic-alpine mycologists from around the world reported on macrofungi from Greenland, Finland, Russia, Swiss Alps, Austrian Alps, Svalbard, the Altai Mountains, Iceland, Alaska and our own Rocky Mountains (including the Beartooth Plateau). The cold arctic-alpine regions cover 8% of the earth's land. Over 90% of the biomass of plants in this biome is produced by 20 plant genera, and these plants, such as willow, bog birch, and *Dryas* depend on symbiotic (mycorrhizal) root fungi for their survival. These fungi produce mushrooms above ground to disperse their spores. Todd presented a poster on the systematics of alpine *Laccaria*, an important mycorrhizal genus. An overview of all the presentations revealed that it is primarily the *same* set of fungi that do the work of providing phosphorus to cold-climate plants, from the arctic tundra all the way to the southern Rocky Mountain range!

Then we set off on a research trip with 12 other mycologists (from Germany, Japan, Italy, Norway, Sweden, Denmark) to help discover the fungi of Svalbard. Please see picture at the end of the newsletter. This island is in the Arctic ocean, only 600 miles from the North pole, and the sun doesn't set for four summer months! Two thirds of Svalbard is covered with glaciers, and the highest temperature ever recorded is 62^0 F. While there are over 160 species of birds, including the delightful puffins, there are no rodents, and only three native mammals (reindeer, arctic fox, and polar bears).

We flew into Longyearbyen airport set between a fjord and glaciers, surrounded by rugged headlands. The town has 1500 inhabitants from several countries, mostly researchers, visitors, students, and Russian coal miners. After finding our lodgings in the metal row of buildings just outside of town, we were drawn to the myriad of tiny mushrooms in the moist tundra surrounding the buildings. Soon all of us were collecting mushrooms in the midnight sun! It was extremely difficult to quit and go inside to sleep.

The next morning we were met by "polar bear guards" which are required for trips into the back country. Unlike grizzly bears, which are mostly defensive, polar bears actively hunt any mammal available, which includes humans. It is quite an eerie feeling to suddenly be a prey species, and not the top of the food chain! Polar bears are protected on Svalbard, so the guards were there mostly to save the bears from us. We didn't see one, and were conflicted about wanting to. Reindeer are also common, and we saw them munching away on the spectacular diversity of tundra lichens. Each afternoon, we returned to our workroom to describe and process the plethora of fungi collected. There were numerous Inocybes for me and Laccarias for Todd. Other researchers were even more specialized: a Japanese scientist was searching for anaerobic fungi in the hindgut of insects, and a German mycologist collected rusts on sedges! A significant diversity of fungi was processed collectively, and we decided to put together a joint publication on new records and species coordinated by the University of Oslo.

On the third day of the trip a huge 10 passenger helicopter flew us along the bird cliffs (green from fertilization of seabird droppings) and dropped us off on a desolate windswept plain just as cold and fog moved in. We successfully scoured the area for patches of bog birch which supported rare fungi. A large bolete (*Leccinum*), mycorrhizal with birch, was the prize of the day.

As for food, there were many kinds of herring and cheese to choose from for breakfast and lunch. Coffee was available, but signs in the cafeteria suggested that if people would bring less luggage onto the planes to Svalbard, there might be enough room to transport milk/cream for coffee to the island. The final banquet was held at the Funkenhouse overlooking the fjord, one of the best

restaurants in all of Norway. The appetizer was raw whale with garlic (surprisingly good!), followed by arctic char and risotto, then lamb and potatoes, a rich chocolate dessert, and finally coffee and brandy in the sitting room to the fire.

Now over 80 collections need to be sorted, descriptions typed out, microscopic features drawn, the fungi identified, and literature gathered for the final summary. What a wonder…these tiny exquisite mushrooms found nestled in delicate moss, among intricate lichen, on barren gravel flats, on reindeer droppings, in permafrost cracks……all on a cold arctic island named Svalbard where it seems so unlikely that anything so fragile could survive.

Departmental Overview Schedule

The Departmental overview will be taking place on October 9-11. Members of the committee were selected based on their field of interest, their standing in the scientific community, and their ability to provide different perspectives to the review. It should be noted that most members have broad interests and should not be seen as limited to the field under which they are listed as representing.

Team Leader
C.A. (Bud) Ryan, Head, Institute of Biological Chemistry, Washington State University, Pullman, - Plant defense signaling mechanisms, polypeptide signals in plants, proteinases and proteinase inhibitors.

Representing Plant Pathology:
Gary Harman, Professor, departments of Plant Pathology and Horticultural Sciences, NYS Agricultural Experiment Station, Cornell University, Geneva, NY - Biocontrol using *Trichoderma*, fungal genomics

Representing Horticulture:
Dan Lineberger, Professor (former Head), Department of Horticultural Sciences, Texas A&M University, College Station, TX - Horticulture, tissue culture, chimeras.

Representing Small Grains Breeding:
Robert Busch, retired small grains breeder, USDA-ARS, and former faculty member, Department of Agronomy, University of Minnesota - Wheat breeding and genetics

Representing Extension:
Dale Gallenberg, Head, Plant Sciences Department, South Dakota State University, Brookings, SD - Extension, administration

AAAS representative:
Deborah A. Samac, USDA, Department of Plant Pathology, University of Minnesota
St. Paul, MN

Following is the Departmental Overview Schedule:

Wednesday, October 9th, 2002

8:00 am – 9:00 am Montana Hall 201	**Charge to the Committee** Dave Dooley Tom McCoy Sharron Quisenberry
9:00 am – 9:30 am	**Tour of LJH, PGC, ABS** Weeden
9:30 am – 10:00 am Leon Johnson Hall 325	**Teaching: Biotechnology** Fischer, Giroux, Sands, Sherwood
10:00 am – 11:00 am Leon Johnson Hall 325	**Teaching: Crop Science** Bruckner, Ditterline, Giroux, Martin, Mickelson, Talbert
11:00 am – 12:00 pm Leon Johnson Hall 325 Pohl, Zadegan	**Teaching: Horticulture** Asleson, Briggs, Dougher, Gough,
12:00 pm – 1:00 pm	**Lunch** (with Dave Bryant)
1:00 pm – 2:00 pm Leon Johnson Hall 325	**Extension** Bryant, Gough, Mikkelson, Riesselman, Seibert
2:00 pm – 2:30 pm Leon Johnson Hall 325	**Teaching: Introductory Biology, Genetics, Evolution** Bergey, Cripps, Lavin, Richman, Sharrock, Sherman, Talbert, Weeden
2:30 pm – 3:00 pm Leon Johnson Hall 325	**Teaching: Plant Biology, Plant Pathology, Mycology** Cripps, Grey, Jacobsen, Lavin, Riesselman, Stout
3:00 pm – 4:00 pm Leon Johnson Hall 325	**Teaching: Graduate Level** Cripps, Dougher, Dyer, Fischer, Giroux, Gough, Martin, Stout, Talbert, Weeden, Young
4:00 pm – 5:00 pm	**Graduate Students**

Thursday, October 10th, 2002

8:00 am – 8:30 am Ag BioScience 108	**Systematics/ Evolution** Cripps, Lavin, O'Neill, Richman
8:30 am – 9:00 am Ag BioScience 108	**Molecular Biology/ Genetics** Bergey, Dyer, Giroux, Kanazin, Sharrock, Sherwood, Young
9:00 am – 9:30 am	**Physiology/ Biochemistry**

Ag BioScience 108	Al-Niemi, Bergey, Dyer, Fischer, Stout, Strobel
9:30 am – 10:00 am Ag BioScience 108	**Plant Breeding/ Genetics** Bruckner, Ditterline, Giroux, Martin, Mickelson, Talbert, Weeden
10:00 am – 10:30 am Ag BioScience 108	**Small Grains** Bruckner, Giroux, Grey, Habernicht, Martin, Mickelson, Talbert
10:30 am – 11:00 am Ag BioScience 108	**Biocontrol** Jacobsen, Sands, Strobel, Zidack
11:00 am – 11:30 am Ag BioScience 108	**Plant Pathology** Bergey, Cripps, Grey, Jacobsen, M. Johnston, Mathre, Riesselman, Sands, Sherwood, Young, Zidack
11:30 am – 12:00 pm Ag BioScience 108	**Horticulture** Briggs, Dougher, Gough, Zadegan
12:00 pm – 1:00 pm	**Lunch** (w/ Department Heads)
1:00 pm – 2:00 pm Ag BioScience 108	**Service Labs** Foster, Grey, Habernicht, Larson, Mikkelson, Seibert, Sun
2:00 pm – 3:00 pm	**Tour Research Fields**
3:00 pm – 5:00 pm	**Writing**

Friday, October 11th, 2002

8:00 am – 9:00 am Leon Johnson 325	**Clerical Staff**
9:00 am – 10:00 am Leon Johnson 325	**Executive Committee**
10:00 am – 12:00 pm Leon Johnson 325	**Writing**
12:00 pm – 1:00 pm Leon Johnson 325	**Lunch** (catered in)
1:00 pm – 2:00 pm Linfield 214	**Exit Interview** Dave Bryant Don Kress Sharron Quisenberry
2:00 pm – 4:00 pm Ag BioScience 108	**Report to Faculty**
4:00 pm – 5:00 pm Montana Hall 201	**Exit Interview** Dave Dooley Tom McCoy

Wednesday Noon Seminar Schedule

October 9	NO SEMINAR (Dept. Review)
October 16	Kelly Kindscher, **(LAVIN)**
October 23	Dr. Bob Peterson, Entomology Biological Risk Assessment and its Interface with the Plant Sciences"
October 30	Dr. Darryl DeWald, Department of Biology, Utah State University "Phosphoinositide Signaling Facilitates Plant Acclimation to Abiotic Stress"
November 6	Dr. Howard Grimes, Washington State University "Multifaceted Roles of Lipoxygenase in Plant Biology"
November 13	Dr. Brian McGlynn, Land Resources & Environmental Sciences
November 20	Dr. Ed Schmidt, Veterinary Microbiology
November 27	Dr. David Brown, Land Resources & Environmental Sciences "Diffuse Reflectance Spectroscopy for Soil-Landscape Analysis"
December 4	Dr. Jamie Sherman, Plant Sciences & Plant Pathology TBA
December 11	Dr. John Pichtel, Visiting Professor, Ball State University "Phytoextraction of Lead and Cadmium from Selected Industrial Sites"

Undergraduate Barbecue

The 'new student' barbecue went very well. Thanks to Bill Dyer, Bob Johnston, and Bob Gough (chef). Many students came, as well as most of the faculty. Most of the students appeared to be already interested or involved in the Horticulture/Landscape Design program. A number of new Horticulture Club members were recruited, and a good time was had by all.

New Graduate Students

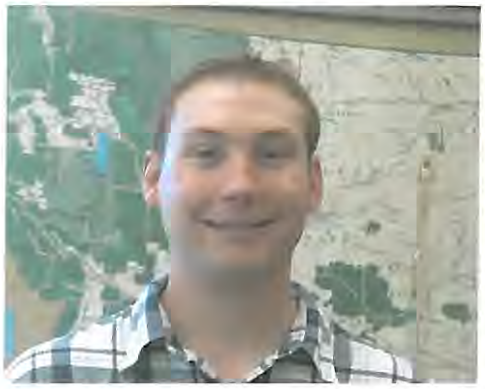
John Ansley – Jacobsen Lab – 130 ABS

Hello, my name is John Ansley. Most of you probably know who I am. I have two bachelor's degrees, one in Secondary Education – General Science Broadfield Teaching and one in Biological Sciences – Fish & Wildlife Management, both of which I received from Montana State University. I have worked for Dr. Barry Jacobsen as a Research Specialist for the last 3½ years. I also have a side business, Big Sky Weed Control, to spray turf and rangeland weeds. My hobbies include hunting, fishing, hiking, and golfing. I am writing to inform you all that I will be working on a Master's Degree in Plant Pathology. My area of research will deal with canker diseases on willow species in response to browse levels. I look forward to the challenges ahead and working with all the wonderful people in this department.

Gina Goss - Bob Gough – 217 ABS

Hi, my name is Gina Goss and I'm a new grad student this semester. I'm working with Bob Gough, looking for the oldest surviving historically significant landscape trees in the Gallatin Valley, and learning about the local history in the process. I grew up in a small town on the southern Oregon coast, but left after high school to see the world, courtesy of Uncle Sam. While in the Navy, I spent most of my time in Maine working on P-3 Orions, the "Subhunters." I also got to spend some time in Sicily, Turkey, Ireland, and a few different places in the continental U.S. After I decided I'd had enough of the military life, I moved to the area with my fiancé, Cody, who is from Great Falls. It has been great to be able to settle down in one place and do some gardening, which of course is hard to do when you move around a lot. I graduated from the horticulture science program here last spring, and I'm looking forward to getting to know more of the people here in the department.

drew Hogg – Giroux Lab – 124 ABS



My name is Andy Hogg and I am a grad student in Mike Giroux's lab. I grew up in Cody, Wyoming, which is on the east side of Yellowstone Park. I received my B.S. in Plant Biotechnology in May, 2002, from MSU and plan on graduating with an M.S. in Plant Science in May, 2004.

Currently, I am researching the puroindoline genes in wheat, focusing on the effects they have on grain hardness and milling quality. After obtaining my degree, I would like to continue working with wheat and hopefully live somewhere in Montana.

When I am not at school, I enjoy doing many outdoor vities like hiking, fishing, mountain biking and of course, skiing. I also enjoy taking trips to Yellowstone and photographing wildlife.

John Noreika – Stout Lab – 332 ABS

Hello, my name is John Noreika and I am a new graduate student in department. I grew up in northeastern Pennsylvania and moved to Bozeman in 1994 to attend MSU. I got my bachelors in Horticulture Science in spring 2002. As I was working on my degree, I was also working in my field. I have worked at many different greenhouses, gardens, and landscaping companies throughout the Bozeman area. I also began and operated my own small houseplant business for a couple of years. In 2000 I began working for the Rocky Mountain Forestry Sciences Lab as a greenhouse and field technician. Also in that year I began working for Dr. Richard Stout and Dr. Thamir Al-Niemi as their greenhouse tech. This was the job that set the stage for my current position as a graduate student. Dr. Stout is now my advisor. Dr. Al-Niemi is training me in the laboratory, and the Thermal Biology Institute now funds me with a research assistantship. My goal is to continue researching the "hot springs panic grass", *Dichanthelium lanuginosum*. This plant is unique in surviving extremely hostile environments. I hope that my work here will help me bridge the gap between horticulturalist and scientist.

Outside of the plant world, I find myself perpetually clambering from rock to rock of every local river in search of "just one more hole" in the world of the trout. When the weather is too cold for this, you may find me sliding my snowboard down the slopes of Bridger Bowl or Big Sky. When all else fails you can find me at home watering my plants and tying flies in hopes of fishing to come. I am looking forward to the next two years of school and am very glad to be alive in this beautiful land of Montana.

Susan Hance – Weeden Lab - 233 ABS

I completed my graduate coursework a couple of years ago and have now returned to finish up a Master's degree with Dr. Weeden. My research involves peas with apparent resistance to (or tolerance of)

Fusarium solani in the field. I will be mapping the genes involved, screening a BAC library for them, and testing a transgenic pea line, among other things. I get to do greenhouse work as well as genetics, which suits me [illegible]ly. This is the fun part of the degree, especially without the pressure of class requirements.

I have two terrific kids (ages 8 1/2 and 7 1/2) and two terrific stepkids (ages 11 and 5 1/2). I also work part time for a land development partnership. My husband, Steve, and I live north of town with 5 horses, our 4 kids, 3 cats, 2 dogs, and 1 hectic schedule.

October Birthdays

Kirstin Golga 4
Hope Talbert 5
Bob Sharrock 11
Jamie Sherman 20
Kelly Hansen 27

On the Personal Side

Congratulations to Xueyan and Wong Shan on the birth of their daughter, Jane. She was born on September 15 and weighed 8 lbs, 2 ounces.

Also congratulations to Hussein and Abdel-Halleem on the birth of their son, Yousef. He was born on September 25 at 7 a.m. and weighed 5 lbs.

[illegible]ipe of the Month

Oatmeal Chocolate Chip Cookies (these don't have a lot of sugar, relatively speaking, great for lunches)

1½ cups flour
1 tsp soda
1 tsp cinnamon
½ tsp salt
½ cup firmly packed brown sugar
½ cup white sugar
1 cup butter
2 eggs
1 tsp vanilla
3 cups quick oatmeal
1 cup milk chocolate or semi-sweet chocolate chips
¾ cup chopped walnuts
1 cup of dried cranberries

Mix well. Use ¼ cup of dough for each cookie. Bake about 16 minutes at 350° degree. Cool on rack.

Mathre Courtyard Completed

On September 10, 30 students in Dick Pohl's Landscape Architecture class (PS 432 –see picture on next page) did the majority of the landscaping for the Mathre Courtyard. Mulching was completed the following Saturday by [illegible]eral volunteers from the Department. Thank you to everyone who volunteered their time and effort.

The Initial Mathre Courtyard Potluck was held on September 19. Jack Riesselman did a great job grilling as usual and a variety of salads and desserts was enjoyed by all. Dr. Mathre's brother Dale, a landscape architect from Nebraska, was also present. We are looking forward to many more gatherings in the Courtyard.

On September 10, 30 students in Dick Pohl's Landscape Architecture class (PS 432) did the majority of the landscaping for the Mathre Courtyard.

Cathy Cripps, Todd Osmundson and arctic alpine mycologists from Germany, Japan, Italy, Norway, Sweden, Denmark go in search of the fungi of Svalbard. This group was generally accompanied by armed polar bear guards.