Plant Science Says

March, 2003

Gordon Research Conference
Temperature Stress in Plants
By Rich Stout

During the last week in January Rich Stout got an opportunity to thaw out a bit in Ventura, California (south

of Santa Barbara) at the semi-annual Gordon Conference on Temperature Stress in Plants. The meeting covered both heat and cold stress in plants, and Rich presented a poster featuring the latest info regarding the Yellowstone "hotplants". Some highlights of the meeting included the following. The meeting began with presentations, and subsequent lively discussion, on the projected effects of global climate change on agriculture and native plant communities….bottom line, the higher the latitude, the more dramatic the changes are likely to be. Genomics dominated the research reports, with lots of gene array data. Some genomic tidbits…..relatively little overlap in *Arabidopsis* versus rice in response to cold; identification of a promoter element, appropriately named the "ice box", commonly found associated with cold-responsive genes; "light-shock" can elicit some classic heat shock proteins; heat shock in Arabidopsis (38° C for 30') changes the level of expression (by 3x or more) of at least 165 genes (125 up [illegible] down); often, dramatic changes in mRNA levels don't necessarily result in changes in the protein levels (but you already knew that); and, if you haven't visited the TIGR website (http://www.tigr.org/tdb/tgi.shtml) recently, you will likely be amazed.

In addition to science, the attendees also were treated to an afternoon of whale watching about 20 miles offshore Ventura at the Channel Islands National Marine Sanctuary (http://www.cinms.nos.noaa.gov/). We saw not only gray whales migrating south from Alaska to Baja California– from a safe distance for the whales, by the way - but also hundreds of acrobatic dolphins and a couple of sea otters. The weather was sunny and near 80° F. Definitely a pretty nice destination for a brief escape from winter.

Workshop on Tools for Environmental Cleanup
By Thamir Al-Niemi

The Workshop on Tools for Environmental Cleanup: Engineered Plants for Phytoremediation was held January 26-28, 2003, at the University of Washington College of Forest Resources in Seattle. The workshop was sponsored by the NIEHS Superfund Basic Research Program and the NSF. The agenda of the workshop included speakers, well known in the area of phytoremediation, from different American universities and some from other countries. Among the speakers was Stuart Strand, Univ. of Washington; Richard Meagher, Univ. of Georgia; David Salt, Purdue University. The audience was a mixture of University professors/researchers and representatives of many environmental and biotechnology companies. The speakers covered and discussed a wide range of applied

research in the area of Phytoremediation. The workshop started with the fundamentals of how certain specialized plants hyperaccumulate trace elements from their environment and continued with topics and discussions on the metabolism of halogenated hydrocarbons by plant cells and the engineering of plants for phytodetoxification of Mercury and explosives. The final subject covered was the risk issues associated with transgenics and the regulations of the EPA regarding environmental cleanup by phytoremediation. One of the best aspects of the meeting, in addition to the continuous drizzle in Seattle, was the thorough panel discussion on the presented topics at the end of each session.

Outstanding Horticulture Students

In conjunction with the American Society for Horticultural Sciences (ASHS), the MSU horticulture faculty has named its outstanding students for the Collegiate Scholars and Outstanding Undergraduate Awards.

ASHS Collegiate Scholars are juniors and seniors majoring in horticulture who are in the top 15% of their class, based on academic standing. The names of these students will appear in the April issue of the ASHS newsletter and each will receive a certificate from ASHS.

ASHS Collegiate Scholars:
Lisa Albert
Amory Blake
Frank Clark
Kristi DeVries
Kyle Foust
Leah Jarrett
Cory Johnson
Stephanie Kienitz
Rebecca Kincaid
Sarah Klingsporn
Susan Knox
Kalan Murano
Gabrielle Schmid

The ASHS Outstanding Horticulture Student Award officially recognizes exceptional undergraduate horticulture students in baccalaureate horticulture programs. Students are selected on the basis of their academic achievements, leadership abilities, participation in campus/club activities, and service to their departments. Recognition is limited to one student per institution. Students' photographs plus names and school name will be published in the April issue of the ASHS Newsletter, and students receive a plaque-mounted certificate of achievement.

Kristi DeVries was selected as our Outstanding Undergraduate not only because has she maintained a high GPA, she has also made the most of her experiences at MSU. Kristi completed an internship at Fred Meijer Gardens in Grand Rapids, MI this past summer. This coming summer she has arranged for her own internship with Bozeman Floral. She is Treasurer for the MSU Horticulture Club and has devoted much time to the club's projects. Furthermore, Kristi is working with Dr. Tracy Dougher through the MSU Undergraduate Scholar's Program on a research project entitled "Light quality effects on lettuce and pansy growth".

Horticulture Student and PGC student laborer, Carma Solomon won the Great Falls Flower Growers Scholarship for 2003. The scholarship carries a $500 cash award.

Congratulations Students!

Thais Wins Award and Receives Masters' Degree

Thais Hulting was just awarded the Outstanding Graduate Teaching Assistantship in the Department of Ecology (College of L&S). She was awarded this honor because of her high energy and enthusiasm that inspires students, going above and beyond the call of duty in volunteering her time on the job, presenting the course material clearly and accurately, responding extremely well to the concerns and questions of students, helping to educate fellow Teaching Assistants, and taking the initiative to maintain all of the lab and course materials in very good shape.

We in Plant Sciences should be proud to have a graduate student who wins an award in another Department and College!

Thais also received her Master's in Plant Sciences on February 11, 2003. She is uncertain as to her future plans.

Graduate Students Defending

Our upcoming graduate students who will be defending their theses are: Jason Cook on April 9, Jason Walling on April 14 and Todd Osmundson on April 16, 2003. Fletcher Meyer received his Master's in Plant Sciences on February 26. Rebecca Bargabus will be defending in May or June.

Former Ph.D. Student Wins Top Regional Research Honor

By Marcia Wood

Discoveries about the genetic makeup of Great Basin wildrye, bluebunch wheatgrass, and other rangeland grasses in the American West have netted a top regional research honor for Utah scientist Steven R. Larson.

A research geneticist with the Agricultural Research Service's Forage and Range Research Laboratory in Logan, Larson has been named the "Early Career Research Scientist of 2002" for the agency's Northern Plains Area. In addition to Utah, the Northern Plains Area includes Montana, Wyoming, Colorado, North Dakota, South Dakota, Kansas, and Nebraska. ARS is the U.S.

Department of Agriculture's chief scientific research agency.

The "Early Career" award is given to scientists who have been with ARS for no more than seven years, and who received their highest academic degree within the past 10 years. Larson and other top ARS scientists were recognized in an awards ceremony today at the agency's Henry A. Wallace Beltsville Agricultural Research Center here.

"Dr. Larson's investigations are revealing new information about genetic diversity--the extent to which plants within a species vary in their 'expression' of traits, such as how quickly their seeds sprout," said Edward B. Knipling, acting ARS administrator. "In addition, Dr. Larson's studies about inheritance of this and other key traits have been invaluable to colleagues who are breeding new generations of native and naturalized plants.

"Dr. Larson's research results also help specialists with other agencies and organizations concerned with rangeland health and productivity" Knipling added.

In earlier work with the Agricultural Research Service, Larson played a key role in tracking the inheritance of genes that control the amount of a compound, known as phytic acid, in corn, barley, and rice. The work is a boon to humans, livestock and the environment. That's because phytic acid, a form of phosphorus, can interfere with uptake of other nutrients essential to people and animals.

Larson's discoveries about the structure of a low-phytic acid gene called LPA-1 sped the development of the world's first breeding material for low-phytic acid barley and rice. These grains have a higher amount of digestible forms of phosphorus than conventional barley and rice. That could reduce the amount of indigestible phosphorus that could otherwise end up in the animals' manure. Excess phosphorus from manure might eventually pollute streams, lakes or rivers.

Larson received his bachelor of science degree in biology from the University of North Dakota in 1988, his master of science in genetics from the University of Minnesota in 1990, and his doctorate in crop science from Montana State University in 1995.

He began working with ARS in 1995 at Aberdeen, Idaho, then joined the Logan laboratory in 1998.

Search for Seed Lab Manager

The Montana State Seed Laboratory is in the process of searching for a new Manager. The search committee consists of Jeff Jacobsen, Chair, Lucy Cooke, Mike DeVries, Dennis Cash and Ron Larson. Screening of applications will begin April 4.

Bob's Byte
By Bob Johnston

Some easy and inexpensive ways to get more life out of your old Windows 98 computer –
(Windows 2K and XP have similar ways to do this)

1. Free up hard disk space:
   Open My Computer
   Right click on the c drive and select properties
   Click on the disk cleanup button – select the folders you wish to clean out – usually you can select everything available
2. Delete all unnecessary programs
   Open My Computer
   Open control panel
   Select add/remove programs
   Delete programs you no longer use
3. Delete all files with a *.tmp extension from your windows temp directory
   Restart your computer
   Before the Windows 98 screen appears press the F8 key several times
   Once the menu screen appears tell the computer to start in DOS mode
   Type cd\windows\temp at the prompt
   This will take you to the windows temp directory
   Type del *.tmp and press the return or enter key
   Once all the files are deleted reboot the computer and go to step 4
4. After you have done steps 1, 2&3 – defragment your hard drive
   Open My Computer
   Right click on the c drive and select properties
   Select tools
   Run an error check first and then defag the drive.
   If the computer keeps restarting the defrag program – restart Windows in safe mode by:
   Restarting your computer
   Before the Windows 98 screen appears press the F8 key several times
   Once the menu screen appears tell the computer to start in SAFE mode
5. Reboot your computer at least every couple of days. The longer Windows 98 runs the more unstable and slower it becomes.
6. Purchase more memory – Memory is cheap these days – 256 Mb can be purchased for about 50 dollars. See me before you do this.

How do I select shrubs from a catalog?
by Bob Gough

March in the north. The only color is in those garden catalogues. But what else is there?

Catalogue companies are in business to make money. They will sell you what you want, whether it will grow in

Montana or not. Look for information, not for pretty pictures. Is the hardiness zone right for those perennials?

In general, western Montana lies in USDA Hardiness Zones 4 & 5, eastern Montana in 3 & 4, and a large part of central in 4. But this system is accurate to only plus or minus one zone. A lot depends upon elevation and site aspect.

Will those pretty flowers take your salty soil? And how about those beautiful azaleas? They won't tolerate your high pH. So think twice and spend your money wisely this spring. The onus is on you to make the right decision.

For additional help in picking out the right plants for your landscape, contact your county extension agent. They will have the best information regarding which plants are right for your particular soil.

Montana Ag Live! Schedule

March 23:
Perry Miller and David Crabtree, MDA Organic Program
Organic Agriculture

March 30:
John Paterson
Livestock prices and food safety

April 6:
Ken Kephart
Soybeans in Montana

April 13:
Duane Johnson
New and value added crops for Montana

April 20: Easter, No show

April 27:
Bob Julien
Facts about wind generated energy in Montana

May 4:
Jim Knight, Wildlife Specialist at MSU
Ground Squirrel Control

May 11:
Bob Peterson, MSU's Risk Assessment Annalist Risk Factors Associated With Bio-tech Crops

May 18:
President Geoffrey Gamble
The recent legislative session and its impact on MSU and its agricultural programs

May 25:
Memorial Day, No show

June 1 TBA
June 8 TBA

Visiting Scientists

We have several visiting scientists in our department at this time. Dr. Irina Soha from Russia is working with Dr. Luther Talbert studying wheat genetics until June. Mr. Heo from South Korea has been here for 7 months and is also working with Dr. Talbert. He will be leaving shortly. Dr. Cha, Director of Wakayama Experimental Forest in Japan, will be arriving in April to work with Dr. Cathy Cripps on Biodiviersity and practical application of high elevation Mycorrhizae. Ms. Frederica Sancin, from Italy, arrived on February 26 to work with Bill Grey on using native grasses for restoration of disturbed sites. When she returns to Italy, she will be working toward a Ph.D. at Padua University.

Wednesday Seminar Schedule (*theses in italics)

3/19 Andy Hogg
"Wheat transformed with *pinA* and *pinB* shows varying levels of decreased kernel hardness"

3/26 Tom Allen
"Moisture and nutrient considerations when reseeding winterkilled winter wheat

4/2 Yuping Wu
"Phytochrome Control of Plant Growth in Wheat"

4/9 Jason Cook
"Microsatellite Markers Linked To a Solid Stem Gene in Wheat"

4/16 Todd Osmundson
"Studies of alpine macromycetes of the Beartooth Plateau and systematic studies of arctic-alpine Laccaria (Basidiomycota, Garicales, Tricholomtaceae)"

4/30 Susan Hance
"Investigations into DRR49, a Pathogensis-Related Gene"

Giannina arrives!
Uvi and Gladys Castillo are the proud parents of a baby girl - Giannina Consuelo. She joins her brother Francisco (age 4) and her sister Hannah (age 6). Giannina was born on February 25, 2003 at 4.37am and weighed 8 pounds 2 oz and was 20 3/4 inches long. Congratulations Uvi and Gladys!

Favorite Quotes
Bill Dyer
I like pigs. Dogs look up to us. Cats look down on us. Pigs treat us as equals.--Winston Churchill

Robyn Klein
"Most men...can seldom accept even the simplest and most obvious truth if it obliges them to admit to the falsity of conclusions which they have delighted in explaining to colleagues, which they have proudly taught others, and which they have woven thread by thread into the fabric of their lives."--Tolstoy

Ray Ditterline
"Nobody is important enough to be important."--*Charley Russell*

Angie Solvie
"Those who say it cannot be done...should not interrupt the person doing it!"-- *Chinese proverb*

Irene Decker
"Other things may change us, but we start and end with family."--*Anthony Brandt*
Matt Lavin
"Trust in Allah, but tie up your camel."--*Arab proverb*

"When two elephants fight, it is the grass underneath them that suffers."--*African proverb*

Gary Strobel
"I have never seen a U-haul behind a hearse."--*Boyd Nelson* of Belgrade MT

Cneryl Moore
"Choose a job you love, and you will never work a day in your life."--*Confucius*

"No occupation is so delightful to me as the culture of the earth, and no culture comparable to that of the garden."--*Thomas Jefferson*

Chris Mahony
"When in doubt, straighten them out" – Chis Mahony

Recipe of the Month
Crock Pot Taco Soup – this is easy and very good!
3 frozen chicken breasts-place on bottom of crock pot
Add:
1 can corn
1 can red kidney beans
1 can black beans
1 can baked beans
1 can tomatoes peeled and chopped with chilies
1 package taco seasoning
You also can add a little chili powder, garlic powder and onion salt. Stir a little, cook in the crock pot on low all day. Cut up chicken, stir and serve with tortilla chips. You can also cook the chicken, cut it up and then add rest of ingredients, heat thoroughly and serve.

March Birthdays

Ben Larson	7
Eva Grimme	9
Gladys Pacheco	14
Jason Cook	16
Yousef Zadegan	17
Vladimir Kanazin	24
Elaine Nichols	31