Plant Science Says

Happy St. Patrick's Day!

March 2005

Bob Gough Named Associate Dean

Bob Gough assumed the position of Interim Associate Dean for the College of Ag March 1. Bob has been in our Department for the last five years and was in the former Plant, Soil and Environmental Sciences Department for five years prior to that. Bob will continue to write and broadcast approximately 260 radio broadcasts per year on 15 stations in Montana, South Dakota and Wyoming in addition to weekly TV segments on gardening on NBC affiliates in Bozeman, Kalispell and Missoula. He also will maintain a Montana GardenGuide website which is published monthly. Congratulations Bob on this well deserved promotion!

Wheat Quality Improvement Team Tour of Asia by Luther Talbert

I had the opportunity to travel with a group of US wheat breeders and cereal chemists to Asia to meet groups involved with purchasing wheat on the world market. The trip was sponsored by the US Wheat Associates, who are charged with enhancing the export market for US wheat. They are funded by state wheat commissions like the Montana Wheat and Barley Committee, and by the federal government. They have offices all around the world, and keep in constant contact with potential buyers to try to match wheat to customers.

Approximately ½ of the wheat grown in the US is exported. Several other countries, especially Canada and Australia, also export significant quantities of wheat. Thus, the market is quite competitive, and high quality wheat is necessary in order for the US to be competitive on the world market. The objective of our tour was to learn from Asian buyers the end-use qualities they desired. The goal is that we use this information to develop varieties that enhance our ability to sell wheat to customers around the world.

Our group spent a couple of days in each of five countries, including Korea, Taiwan, China, Thailand, and the Philippines. Usually one day was spent in a series of meetings with flour mill and bakery representatives, and the second day was spent touring mills and factories that used a lot of imported wheat. One thing was clear in every country - Western-style pan bread is not nearly as popular as noodles and steam bread. Asian noodles are different from our pasta in that they use hexaploid wheat instead of durum wheat, and they cut noodles from dough sheets instead of using an extruder to mold the dough. There are dozens of different kinds of Asian noodles-Ramon noodles, Udon noodles, wet noodles, raw noodles, dry noodles, Bamee noodles, instant noodles, and many variations of these main types. And they all have different flour requirements.

In addition to noodles, many Asian countries also eat a lot of steam bread. This is not as highly leavened as Western-style bread, and as one might guess is steamed instead of baked. The texture is very fine and springy compared to normal US bread. Often they fill the bread with something to make what are called steam buns. Steam bread also varies region to region-for instance there is a South China style and North China style. And

of course, the flour requirements are different for every style. Finally, in addition to noodles and steam bread, Asians eat a lot of dumplings, which have their own flour quality requirements. Our challenge as breeders and cereal quality experts is to select for quality attributes that are positive for a range of products, so that we encompass as much of the market as possible. Of course, that is also the objective of breeders in Australia and Canada, which leads to a competitive market for wheat in the world.

The countries we visited purchased a lot of hard red spring wheat for its high protein and strong gluten, and this class of wheat comes basically from Montana and North Dakota. (In fact, there is a brand of flour in the Philippines called "Montana Brand' flour). So we ate a lot noodles and steam bread made with Montana wheat. In general, most buyers were happy with the strong gluten, high water absorption and baking quality of US hard red wheats. So we can say 'Good Job' to Deanna,

From a wheat field in Montana

To a steam bun factory in Taiwan

Jackie, Harvey and their crew in the Cereal Quality Lab. But lest they become big-headed, there were some suggestions for improvement also. In particular, several buyers felt that hard red spring wheat flour could be more extensible. Also, there was interest in wheat with lower ash content. And of course, implicit in the criticism was that we better address these issues or they will look more closely at purchasing wheat from other sources.

In terms of fun on the trip, I would rather not broach this subject in writing until I receive my reimbursement check from US Wheat Associates.

Capitol Rotunda – February 9, 2005
By Angie Solvie

The Capitol Rotunda was bustling with activity as Montana State University researchers, Montana NSF EPSCoR and Montana based businesses set up poster displays for legislators to see firsthand all of the innovative research projects that are currently being supported by the Montana Board of Research & Commercialization Technology.

Governor Schweitzer takes a moment to peruse Dr. Andreas Fischer's poster presentation.

The Board, which was created in 1999 by the Montana Legislature, and has provided "a predictable and stable source of funding" for a wide range of projects in research and commercialization, such as production agriculture, electro-optics, biotechnology and digital imaging to name a few. According to Dave Desch, MBRCT Executive Director, the Board has committed more than $10 million to 43 projects and it is imperative that legislators have an opportunity to see the quality of these projects and their importance to the state's economy.

Since space is limited in the Capitol Rotunda, only a limited number of projects were selected to represent the MBRCT support. There were many participants from Montana State University, but closer to home, the MSU Plant Science and Plant Pathology Department was represented by Drs. Andreas Fischer, Nina Zidack (B. Jacobsen,) Uvi Castillo (G. Strobel), Jamie Sherman (Luther Talbert), Glen Babcock (commercial mushroom producer with Cathy Cripps) and the Montana NSF EPSCoR administrators from MSU and UM campuses.

Many others from the PSPP department have received funding in the past. For more information about MBRCT opportunities please visit http://commerce.state.mt.us/BRD_RCT.asp

Dave, Desch, MBRCT Executive Director and Jane Todd, MBRCT Program Specialist

It was a pleasure to support the MBRCT in their ongoing efforts to support science and technology research and economic development throughout the state of Montana.

Elaine Matlow Trains to be IT Support Specialist

On February 4, Elaine completed a week of training to be certified as an IT Support Specialist. The training covers several areas including telephone services, networking in relation to our campus, operating systems from MS DOS to Windows XP, the web in relation to our campus, functions of the ITC store, setting up banner accounts, antivirus software and other security issues and how to configure a PC. This knowledge will be of great benefit to those who work in Leon Johnson Hall. Congratulations Elaine!

New Employee
Alice Ortmann (Mark Young)

I have recently moved to Bozeman and began working in Mark Young's lab where I will be participating in the Yellowstone project, working with viruses of thermophilic Archaea. I recently completed my PhD in Oceanography at the University of British Columbia in Vancouver, Canada under the supervision of Curtis Suttle. My dissertation focused on virus distribution and abundances around deep-sea hydrothermal vents and looked at factors that could affect virus-mediated mortality of prokaryotes, including prokaryote diversity. During my time at UBC, however, I managed to be involved in summer cruises in the Strait of Georgia, working on virus-mediated mortality of prokaryotes in coastal waters and dabbled in induction experiments. The scenery alone was worth setting up experiments that needed to be sampled 24 hours a day. I also spent six weeks on a research ship in the Arctic, sampling virus communities in preparation for a year-long project called CASES. I did my undergraduate studies all the way across the city at Simon Fraser University in Burnaby, where I got the opportunity to participate in a semester-long field school in Bamfield on the west coast of Vancouver Island. Somehow, during all this exposure to the ocean, I managed to get completely hooked on SCUBA diving and taught diving for a few years to supplement the grad school income. I also became involved with a bunch of crazy divers who make up the Underwater Archaeological Society of British Columbia and am helping write, what we hope will be the definitive paper about the wreck of the SS Beaver, the first steamship on BC's coast.

New Graduate Student
Jack Meyer (Barry Jacobsen)

I completed my undergraduate degree in chemistry/biochemisty at Calvin College in Grand Rapids MI, in 2000. Since then I have been working on our potato farm out near Churchill. I just started my masters program this spring and I am working with pototoes in Jacobsons lab, while farming part time. I am married and have two daughters ages 21/2 and 7 months. The closest thing I have to a hobby is potty training a 2 year old.

Montana Ag Live! Show Celebrates Ten Years

March 20 will mark the ten year anniversary of Montana Ag Live!, a television program Jack Riesselman started. For those of you who are not familiar with this television program, it consists of a panel of individuals who answer questions called in during the program by people from all over Montana. Some of our more faithful phone answerers have been Martha Mikkelson and Debbie Willits. The panel consists of Hayden Fergusen (retired soil scientist), three more individuals who are experts in pest management, horticulture, agronomy, etc. plus a guest panelist who can speak to a specific topic, eg water law. Topics covered in the past run the gamut from

rodent control to wheat marketing . Even if you are not a regular listener, be sure to tune in on Sunday, March 20, at 7 pm. on PBS for our anniversary show. Clips from early programs will be featured.

ɔb's Byte
By Bob Johnston

MSU is in the process of bringing a web portal to the MSU campus system. In contrast to the static web page that everyone currently sees, a portal is a customized page that displays information relevant to the user. The development team is in the process of developing "channels" for students, faculty and staff and eventually, prospective students and alumni. This is also part of the new "branding process" that the university is developing to give all the web pages at MSU a similar feel and function.

The portal provides email, calendaring, and many other tools. There is a Black Box on the portal, which is the security for the Portal. It will identify you by a username and password. The first time entering Banner, or other integrated applications, from the Portal, your credentials may be required, but this is a one-time only requirement and after this, you can automatically enter Banner through the Portal.

ıculty and staff will use Outlook for email and there will be a couple of different ways to access Outlook from the Portal. Targeted Messaging will be available. This will be used for messages that need attention within the next 24 to 72 hours. For example, a target message is sent stating a meeting is taking place the next day. If the message is not read by the time the meeting takes place, it will be removed, as it is unnecessary for any action to be taken at that point (only on messages and announcements – not email messages). Using the targeted messaging feature of the Portal will help cut down on the amount of Spam. And of course, for those people who are reluctant to change or do not use anything but email, they will still be able to access Outlook from their desktop icon.

One function that will be of value to instructors and students is a function called Course Studio, which is a collaborative environment based by class grouping in Banner. For example, 20 people are signed up for English 101 through Professor John Smith – they will automatically be in a Course group , "Eng 101", and so on. Course Studio allows for tools to be used, such as chat rooms, resources, links, announcements, news, formation on the class, emailing to other individuals within the class, and file sharing.

The concern on the Bozeman campus is we also provide WebCT to our campus. There is some cross functionality between the course studio and WebCt and it might end up being that both tools are provided on campus and the faculty can decide which would best suit their needs. Course Studio allows email and announcements to go straight to the person's email account or personal announcement channel and the person would receive it immediately. WebCT requires the person to be logged in to the course to receive the email.

Course Studio does offer the faculty the ability to turn off any Course Studio tools they wish not to be used. So, if they don't the ability for the chat room, they can turn off that specific functionality. If they just want the page available for the students to share, they can do that, as well. Course Studio has much less "overhead" for faculty (e.g. learning how to use the tool set) and is used to facilitate collaboration, while WebCT is used for instructional (a learning management system).

The beta rollout is scheduled for June with full deployment by September 2005 – stay tuned.

Submitted by Bob Johnston and Chris Bauer of ITC.

By Bob Gough
How To Propagate House Plants

It dawned on me that we often mention when to propagate house plants, but we rarely say how to do it. Most people simply place cuttings in water and hope for the best. The shoots of some species, such as the lipstick plant, will root in water, but many species won't. And even after those that root in water have sent out numerous new roots, they must be repotted into soil soon. You cannot sustain them on water alone. The following table lists which species may be propagated in various manners. Accompanying that is a discussion of the procedures for propagating most house plants.

Herbaceous Stem Cuttings: If your species is best propagated by cuttings, clip from the parent plant a piece of stem about 4-5 inches long, with leaves attached. Make the lower cut just below a node. (A node is the point of attachment of a leaf.) From the bottom 1.5 to 2 inches of the stem remove the leaves so they do not rot in contact with the soil. Dip the cutting base in water and then into a commercial rooting hormone. Shake off the excess hormone. The hormone is usually a dry powder that will adhere to the moist plant stem. Make a hole in the media with a pencil and stick the cutting in, firm the media about its base, moisten the media and place it in a

warm window. Note: Allow the cut end of cuttings with sticky sap, such as cacti and geraniums, to dry for a few hours before dipping them in the hormone to reduce infection.

Leaf Cuttings: Take healthy leaves from your mother plant and stick their petioles into the media. New roots and shoots will form from the base of the petiole.

Lay leaf blades of bryophyllum, jade plant, and begonia flat on the media, with their lower surface pressed gently into the media to afford good contact. New roots and shoots will form from the leaf, which eventually will decay.

Swordshaped leaves on plants such as sansevieria can be cut into cross sections, each of which is then placed in the rooting media. New shoots and roots will form from the basal end of each cutting.

Leaf-bud Cuttings: Using simply a leaf of these plants will produce only shoots and no roots. In this case, the leaf-bud cutting is in order. Take a leaf plus its axillary bud and a portion of the stem. You may then dip the stem portion into rooting hormone , make a hole in the media with a pencil, and stick the cutting into the hole. Firm the media about the cutting base. The shoots of the new plant will form from the axillary bud.

The media: Use a mixture of sand and peat or of sand and vermiculite in which to root cuttings. Add no fertilizer to the rooting media.

The Container: Whatever container you use in which to root cuttings, firm and moisten the media about the base of the cutting and cover the container with plastic to maintain a high relative humidity. A plastic sandwich bag works well placed over a flower pot. Leave the bag loose at its base to allow for some air flow.

Plant Common Name	Plant Scientific Name	Type of Cutting	Time to Root in Weeks
African violet	*Saintpaulia* spp.	Leaf	3-4
Aluminum plant	*Pilea* spp.	Stem	2-3
Aphelandra	*Aloe* spp.	Leaf	4-6
Arrowhead plant	*Aphelandra* spp.	Stem	2-3
Begonia	*Syngonium albolineatum*	Stem	2-3
	Begonia spp.	Stem (fibrous root); Whole Leaf or Leaf Section (Rex)	4-5
Cactus	*Cephalecereus senilis*	Stem	3-4
	Opuntia microdasys	Stem	3-4
Chrysanthemum	*Chrysantemum* spp.	Stem	1-2
Coleus	*Coleus blumei*	Stem	1-2
Crown of Thorns	*Euphoria splendens*	Stem	4-5
Dahlia	*Dahlia* spp.	Stem or Leaf-Bud	3-4
Dieffenhachia (Dumbcane)	*Dieffenbachia* spp.	Stem	4-6
Dracaena	*Dracaena* spp.	Stem	3-4
Echeveria	*Echeveria* spp.	Leaf or Stem	4-6
Fittonia	*Fittonia* spp.	Stem	2-3
Fucshia	*Fucshia* spp. and hybrids	Stem	1-2
Geranium	*Pelargonium* spp.	Stem	1-2
Hoya	*Hoya* spp.	Stem	3-4
Hydrangea	*Hydrangea* spp.	Stem	2-3
Ivy	many species	Stem	2-3
Jade Plant	*Crassula* spp.	Stem or Leaf	4-5
Kalanchoe (bryophyllum)	*Kalanchoe* spp.	Stem or Leaf	4-5
Lantana	*Lantana* sp.	Stem	3-4
Monstera (split-leaf philodendron)	*Monstera deliciosa*	Stem	4-5
Mint	*Mentha* spp.	Stem	2-3
Peperomia	*Peperomia* spp.	Leaf, Leaf-Bud, or Stem	4-6
	P. obtusifolia	Leaf-Bud or Stem	4-6
	P. obtusifolia varietgata	Leaf-Bud or Stem	4-6
Petunia	Petunia hybrids	Stem	2-3
Philodendron	*Philadendron* spp.	Stem	2-4
Piggyback Plant	*Tolmiea menziesii*	Leaf with Plantlet	3-4
Pothos	*Scindopsus aureus*	Stem	2-3
Poinsettia	*Euphorbia pulcherrima*	Stem	2-3
Sanserveria (snake plant)	*Sanserviera* spp.	Leaf or Leaf Section	4-6
Velvet Plant	*Gynura* spp.	Stem	1-2
Wandering Jew	*Tradescantia* spp.	Stem	2-3

March Birthdays

Bobby Bear	6
Eva Grimme	9
Yousef Zadegan	17
Vladimir Kanazin	24
Leslie Shama	31
Elaine Nichols	31

Recipe of the Month

Irish Soda Bread

3 cups all-purpose flour
1 tablespoon baking powder
1/3 cup white sugar
1 teaspoon salt
1 teaspoon baking soda
1 egg, lightly beaten
2 cups buttermilk
1/4 cup butter, melted

Preheat oven to 325 degrees F (165 degrees C). Grease a 9x5 inch loaf pan.

Combine flour, baking powder, sugar, salt and baking soda. Blend egg and buttermilk together, and add all at once to the flour mixture. Mix just until moistened. Stir in butter. Pour into prepared pan.

Bake for 65 to 70 minutes, or until a toothpick inserted in the bread comes out clean. Cool on a wire rack. Wrap in foil for several hours, or overnight, for best flavor.