Plant Science Says

August, 2004

Gordon Research Conference on Plant Senescence
By Andreas Fischer

I had the opportunity to attend a meeting dedicated to my favorite scientific topic from June 27 – July 2. This year's Gordon Conference on Plant Senescence was held at Mt. Holyoke College, about 2 hours on the highway (I-90, called the "Massachusetts turnpike" by the locals) west of Boston. Mt. Holyoke is a private 4-year college, dating back to 1837 and still only accepting female undergraduates. The campus is impressive; 19th-century brick buildings are intermingled with more recent structures and lots of big, old trees, including several species which would not survive in Montana (they occasionally need water).

Meeting participants were housed in a 1950's residence hall (a new experience as I have never seen a residence hall from the inside...), and sessions were held in the 250-seat science auditorium (amply big enough for the 130 attendees). While people carried slide carousels around until quite recently, everybody now gives their talks directly from their notebook computers – having 4 or 5 of them stacked up at the front of the room before each session was actually quite funny! I gave a talk about the use of QTL mapping for the functional analysis of nitrogen recycling during leaf senescence; this approach is still not widely used (at least not among senescence researchers), and was of considerable interest.

As in other plant science disciplines, senescence research involves extensive use of genomic and proteomic tools to (try to) understand both the regulatory networks and the "executors" of the senescence and cell death processes. The result, which emerged in several talks, could be summarized as "transcription factors galore" – but, in functional/biological terms, what does it all mean? Of more direct interest to me were the talks and posters dealing with the "execution" of the senescence program. One especially interesting talk introduced protease activity profiling, a fairly new and ingenious method allowing one to covalently tag proteases with specific, biotinylated inhibitors (such as E-64 for thiol proteases). Without (hopefully) getting too technical, the beauty of this approach is that the biotin label will allow streptavidin-based detection and purification of tagged proteases; theoretically, using a combination of this method with PAGE / 2-D PAGE and mass spectrometry allows direct identification of the protease gene(s) most active in a given biological system, provided a genomic or EST sequence is available. Another fascinating subject was chlorophyll degradation; it is now entirely clear that this pathway should be characterized as a detoxification system, as uncleaved tetrapyrroles with an intact system of conjugated double bonds are highly toxic when light energy is available. As a sideline of this research, it appears that people working on this problem are moving closer to understanding the molecular basis of the classical Mendelian trait ("wait another 6 or 12 months" was the answer to a direct question on this).

An additional benefit was the possibility to renew contacts with some European (French, Swiss, German, English) researchers (who come more willingly to meetings on the East coast), and to make some new contacts with people previously only known from the literature (e.g. a person from Japan, who has been persistently working on Rubisco degradation for the last 20 years or so).

While the meeting was a lot of fun, I was glad to catch the plane back to Montana and tell the couple from New York in the next seat (going to a wedding in Big Sky, and asking what brought him to Bozeman) that I actually lived there!

Annual Meetings of the American Society for Horticultural Science, 2004
By Bob Gough

Austin, Texas is a wonderful place to be in mid-July, especially for C4 plants and armadillos. But with the

advent of electricity and the most marvelous invention of air conditioning, the 2004 meetings of the American Society for Horticultural Science were a pleasure to end. Cheryl and I had an uneventful flight from Bozeman to Austin, via Minneapolis, on 16 July. After hiring a shuttle from the airport to downtown we booked into the convention and immediately sank into conversations with many old friends from around the world. There were the usual moans and groans about budget cuts and loss of personnel at many of our sister institutions, but hearing of the magnitude of those budget lows made me realize that they could happen only if your budget highs were very high. Since that is not the case at MSU I suspect we'll be spared the enormity of the most intense throes and continue to float somewhere between a budget zenith and its nadir. Not so for many others, including Ohio State University and Oregon State University, which seems perennially to be in a budget crisis. I understand the Extension Service at both institutions has been devastated by the most recent cuts. But the number of horror stories was fewer than in past years, so perhaps things are looking brighter.

Cheryl Moore, Bob Gough and Tracy Dougher attend the Annual Meetings of the American Society for Horticultural Science, 2004

About a thousand members attended the meetings this year, down from 1500 that attended the Orlando meetings several years ago. The expense of attending the meetings coupled with continuing institutional fiscal problems no doubt contributed to the lower attendance. Being in mid-Texas in mid-July was not a contributing factor. But the meetings are a chance to learn and to have fun. I started with the fun immediately and attached a "New Member" ribbon immediately below my "Fellow" ribbon, both of which I wore below my name tag for a few days, just to see if anyone noticed a paradox. No one did, which told me that either folks think they can join a society and become a fellow co-incidentally, or that no one ever pays much attention to ribbons.

The various committee meetings are always a challenge, and this year's Publication Committee meeting was no exception. Though my term as Chair of that committee ended last year, the ASHS Executive Director asked me to sit in on this year's meeting, just for fun. When I began my term as chair, the average time for a manuscript to be published in the Journal of the American Society for Horticultural Science was around 11 months, which was far too long. And so in response to the pounding of angry fists, I tinkered with the system and reduced the time to approximately 8 weeks. Many said it could not be done, but my committee did it. The same professionals that claimed it could not be done this year sat around the table and claimed that, well, yes, we did it, but it won't continue to work! Fortunately, the naysayers may make blinding, choking smoke, but little fire.

The presentations themselves were informative as always. We attended several on herbs, spices, and medicinal plants, a very interesting area that has matured out of fuzzy folklore into a highly professional and respected area of study. We are completely missing out on this at MSU. In deference to her diagnostician's job, Cheryl spent many hours in a workshop on etiology, epidemiology and pathology of *Colletotrichum acutatum* on strawberry. Several other workshops were quite stimulating, but one that raised a warning flag for me was on the future of extension--always a contentious issue. The Feds are promoting a fairly new program called E-Extension, which links state extension services into a nationwide electronic network. The selling point is that it will eliminate the need for every state to have a publication on, say, turf or apples or tulips. Certainly that will eliminate superficially duplicative efforts, but I believe it will also eliminate many of the smaller/weaker extension services, such as the one in Montana. We cannot compete with the likes of Michigan State or Cornell or UCal-Davis on the numbers and diversity of publications and programs and we will eventually cease to exist; with us will go the ability to speak directly to the needs of our growers, for an extension specialist in California cannot possibly understand the diversity of our growing conditions and include all contingencies in his/her bulletin. Reminds me of the big box stores forcing the mom and pop stores into extinction.

During the meetings we caught up with Tracy Dougher, new Chair of the Controlled Environment Working Group. The three of us visited a great Mexican restaurant and also spent some time at the ASHS Welcoming Reception before a painfully loud country band, brought in not for entertainment but solely to inflict inner ear pain, forced a large portion of the horticulturists to flee the room. Tracy had spent much time during the meetings at a poster reporting on the work of one of her students. Rebecca Kincaid. an MSU

Horticulture major, who finished a special project examining "Nitrogen Effects on the Growth of *Ratibida columifera*." The Industry and Extension Banquet on Monday evening was fun, as always. Following a great meal and plenty of opportunity to sample various shades of products made from *Vitis vinifera, Humulus lupulus*, and *Hordeum vulgare*, all in deference to the profession, of course, we all participated in a sing-along led by the well-lubricated outgoing VP for Extension.

Professional meetings are a wonderful way to recharge your batteries. After a year of the daily grind at MSU with the weight of the world on your shoulders, attending the annual meetings of your profession perk you up, tell you that your colleagues share the world's weight with you, and give you new ideas for projects and collaboration or new insights into your old projects. They boost professional commararderie and enhance esprit d'corps. It is a disservice to your colleagues, to your profession, and to yourself to miss attending your society meetings.

Grants

Alice Pilgeram; Crop Diversification; The MSU Foundation

Nina Zidack; Biological Control of Weeds with Plant Pathogens on Public Lands; Bureau of Land Management

Also, the following received Montana Wheat and Barley Grants: Deanna Nash, Tom Blake, Phil Bruckner, Luther Talbert, Jack Martin and Jack Riessleman.

Should I remove my lawn clippings each time I mow?
By Bob Gough

Just about everyone has a lawn nowadays, whether they want one or not. It's simply the right thing to do. Having a lawn has probably led to increased sales of aspirin because just about everyone frets over whether they should catch and remove the clippings or whether they should leave them where they fall.

Experts can make a case for either removing or not removing the clippings. That's why they're experts. Being once part of the grass plant, clippings contain nutrients the plant's roots extracted from the soil. In fact, clippings from one thousand square feet of lawn contain, on average, almost three pounds of nitrogen, one pound of phosphorus, and two and a half pounds of potassium. If left to rot, the clippings return this substantial quantity of nutrients to the soil to promote further growth. That means you can use less fertilizer on the lawn and save money.

On the other hand, those homeowners that let their grass get very tall before they mow will have to remove the clippings. Heaps of clippings laying down in windrows by the mowers look unsightly and block sunlight from reaching the lawn, turning it yellow beneath. In effect, the clippings act like a mulch. Remove those clippings and relegate them to the compost pile. Or let them dry for a day or two and use them to mulch your garden. Trying to save work by mowing less actually makes more work. Removing so much of the leaf surface at one time also causes great physiological shock to the grass plant, weakens it, and makes it more prone to disease and insects. To the grass, the difference between frequent, moderate mowing and infrequent, severe mowing is the same as that between nicking your finger and cutting off your arm.

Bob's Byte by Bob Johnston
(Irene Decker filling in)

Temporary Absence Greeting

With summer in full swing, many of us go on vacation or take extended weekends. One question – Did you record a Temporary Absence Greeting on your voicemail? Nothing is more frustrating than to leave a voicemail and not receive a call back for days, but then find out the person was on vacation! This has happened to many of us, so we are going to review how to record a Temporary Absence Greeting.

To record a Temporary Absence Greeting:

1. Enter Meridian Mail by pressing your "Message" button, or dial "6060".
2. Enter your password, if necessary.
3. Press "82". You will then hear, "*For your external greeting, press 1. For your internal greeting, press 2. For your temporary absence greeting, press 3.*"
4. Enter "3" for the temporary absence greeting.
5. Press "5". At the tone, begin to record your greeting.
6. When you have finished recording, press "#". You will then hear, "*Recording stopped.*"
7. To listen to your greeting, press "2". Meridian Mail will then play your message.
    a. If you are satisfied with the greeting, continue on to set the expiry (see step 10).
    b. If you are not satisfied with the greeting, press "76" to erase it.
8. Press "5" to begin recording again, and press "#" when finished.

9. When you are satisfied with the greeting you have recorded, you will need to press "9" to set the date and time for the temporary greeting to expire (referred to as the "expiry"). This is an important step, because if the expiry is not set, the temporary greeting will stay on until you manually delete it.
10. Voice prompts will lead you through the process, which involves entering the month, date, and time (in 24 hour or "military" time), each followed by "#". The system will confirm your settings via voice prompt, at which point you can hang up. Your temporary greeting will automatically end, and your mailbox will revert to your normal greeting at the date and time you have set.

August Birthdays

Barry Jacobsen	6
Thamir Al-Niemi	6
Al Scharen	9
John Terry	17
Toby Day	18
Angela Suffridge	20
Sheryll Quigley	22
Yusuke Odake	28
David Sands	30

Recipe of the Month

Spinach-Feta Croissants

1 (10 oz.) package of frozen chopped spinach, thawed
4 oz. crumbled feta cheese (you can use low-fat feta if desired)
5 croissants (whole wheat or white)
4 slices Swiss cheese

Drain the spinach in a colander. Then press out any excess moisture from the spinach. In a medium bowl, stir together the spinach and feta cheese. Slice the croissants into top and bottom halves. Lay the bottom halves on a cookie sheet. Place the spinach-feta mixture on the croissants. Place a slice of Swiss cheese on top.

Bake at 425 degrees for about 10 minutes, or until the Swiss cheese is melted and bubbly. Replace the top half of the croissant. Serve with fresh fruit or a green salad.

Peach Yogurt Smoothie

4 peeled and quartered peaches
8 ounces vanilla yogurt
1/2 cup milk
1 rounded tablespoon brown sugar
dash ground nutmeg

Blend in blender while adding ice cubes one at a time until thick and smooth. Serves 4.

Biotech Class

The fourth annual Frontiers in Biotech class has come to a close. Ten high-school seniors from around the country participated in a yearly biotechnology internship program under the tutelage of Dave Sands, Tony Kern, Tami Goetz (Salt Lake Community College) and Cheryl Powers (Cate School in Carpentaria, California). A loyal, local supporter of the program is Glenna DeRham (bottom row, middle). One of the goals of the program is to expose students to many different areas of biotechnology, primarily through discussions with numerous MSU researchers, library research, and significant hands-on individual laboratory research projects. At the end of this year's four week session, the students each gave a presentation on their project. The titles of the presentations were, "Blaze of Glory: The Biosynthesis of 1-octen-3-ol," "Magnetobacter – Isolation, Properties and Potential Uses," "Leapfrogging the Pharma: Searching for COX Inhibitors," "Systemin: The Silent Siren in Plants", "Striga: Taming Africa's Worst Weed", "Searching for Omega-3 Plants" and "You Are What You Eat: Fish Feed Alternatives."