

Plant Science Says



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Field Days - 2009 Eastern Ag Research Center by Janelle Jensen

The Annual Field Day at the MSU Eastern Agricultural Research Center on July 16, 2009 began with a welcome given by Jerry Bergman, Eastern Ag Research Center (EARC) Superintendent/Williston Research Extension Center Director. Jim Squires, EARC Advisory Committee Member discussed the MSU-EARC Building Project and fund raising efforts. Senator Don Steinbeisser also discussed the MSU-EARC Building Project and the integration of the county extension service into the MSU-EARC



facility. Jeff Jacobsen, Dean and Director of the College of Ag and Montana Ag Experiment Station, concluded the welcome program with discussion on the importance of agriculture to our region.

The tour had concurrent topics of discussion by the following individuals:



Dr. Barry Jacobsen, MSU Extension Pathologist, Bozeman, MT discussed "Alternative crop disease management"

Russ Fullmer, Sidney Sugars Agricultural Manager, discussed "Sugarbeet varieties and the 2009 sugarbeet crop and outlook".

Chet Hill, NDSU-WREC Extension Specialist, Williston, ND discussed "Alternative crops".

Dr. Charles Flynn, MSU-EARC Research Chemist, discussed "Oilseeds for biodiesel/biobased products and corn/small grains for ethanol" (see below).



Ron Larson, Montana Seed Growers Association Manager, Bozeman, MT discussed "Seed certification and its role in technology transfer".

Lorna Bradbury, NDSU-WREC Horticultural Research Specialist, Williston, ND discussed "High value horticultural crops for the MonDak region".

Dr. Jerry Bergman, MSU-EARC Superintendent/NDSU-WREC Director discussed "Safflower research and management".

Dr. Joyce Eckhoff, MSU-EARC Research Agronomist, discussed "Value-added durum research and development".

Dr. Thomas Blake, MSU Barley Breeder, Bozeman, MT discussed "Barley varieties and development".

Dr. Luther Talbert, MSU Spring Wheat Breeder, Bozeman, MT discussed "spring wheat varieties and development".

Dr. Bart Stevens, USDA-ARS Agronomist, Sidney, MT discussed delayed "Nitrogen fertilizer research".

Dr. Robert Evans, USDA-ARS Research Leader and Agricultural Engineer, Sidney, MT discussed "Irrigated cropping systems".

The tour concluded with a noon luncheon of steak fondue sponsored by area agri-businesses.

Northern Ag Research Center

By Greg Carlson

The Annual Field Day at the Northern Agricultural Research Center was held Tuesday, June 30, at Fort Assiniboine, south of Havre. In the way of outcome, we had an attendance of 150 farmers, ranchers, agribusiness folks and others. Four different, 90-minute field research tours were offered three times each during the day at 9:00am, 10:30am and 1:30pm with a hosted BBQ lunch and program at noon. Seventeen MSU and other tour-talk presenters logged over 400 total clientele contact hours with 45, 90, 46 and 89 folks taking in the Beef Cattle Research, Cereal Crop Variety Research, Oilseed & Pulse Rotation Crop Research, and Other Agronomic Research tours, respectively. Guest speakers for the noon program were Frank Schoonover, Director Chairman of the Montana Wheat and Barley Committee and Dr. Jeff Jacobsen, Dean & Director of the MSU College of Agriculture and Agricultural Experiment Station.

It began with registration, coffee and stationary displays at 8:00 a.m. with program activities running from 8:45am to 3:00pm.

A special feature of the Field Day program for this year was a range plant identification **workshop tour at NARC's historic rangeland "relic" area where there has been no domestic animal grazing since Fort Assiniboine closed in 1911.**

Four different 90-minute field tours were offered twice each in the morning and once again in the afternoon. Thus, folks in attendance for the entire event were able to take in their choice of three of the four tour options available. Wagons departed for all tours promptly at 9:00am, 10:30am and 1:30pm.

A free barbeque lunch was served at noon by the Ag Committee of the Havre Area Chamber of Commerce courtesy of several business and organization sponsors.

The four tours offered were Beef Cattle Research, Cereal Crop Variety Research, Oilseed and Pulse Rotation Crop Research and Other Agronomic Research.

Beef Cattle Research:

The Beef Cattle Research tour featured a range plant identification workshop. Dr. Darrin Boss, Ruminant Nutritionist at Havre discussed manure composting, provided a brief update of NARC livestock research, and presented a history of the rangeland relic area while the tour wagon traveled to the workshop site. Joe Broesder, MSU Extension Agent for Hill County; Dr. Jane Mangold, MSU Rangeland Weed Specialist; Marko Manoukian, MSU Extension Agent for Phillips County; and Tom Welch, Associate Professor of Agricultural Technology at MSU-Northern led four separate plant identification stations for the workshop.

Dr. James Berardinelli, MSU Reproductive Physiologist, discussed current research with estrus synchronization in beef cattle.

Cereal Crop Variety Research:

Montana State University crop geneticists, Dr. Phil Bruckner, Dr. Jamie Sherman and Dr. Tom Blake of Bozeman, showed and discussed newly released and promising experimental lines of winter wheat, spring

wheat and barley on the Cereal Crop Variety Research tour.

Bruckner further showed historical winter wheat varieties growing under 2009 cropping conditions at NARC in a special museum nursery. Growing these older varieties from time to time provides old-timers a chance to reminisce about the various varieties they used to grow and provides younger farmers with the opportunity to see varieties they have heard their father, grandfather or great-grandfather talk about. The museum nurseries also serve as a means of assessing progress through plant breeding efforts over time.

Oilseed and Pulse Rotation Crop Research:

On the Oilseed and Pulse Rotation Crop Research Tour, Peggy Lamb, Agronomy Research Associate at NARC, showed and discussed camelina rotation studies set up with winter wheat, spring wheat, barley, camelina, peas and fallow. She also showed and discussed canola variety evaluations, camelina seeding date and seeding depth studies, and camelina variety evaluations.

Karnes Neill, Agronomy Research Associate at Central Agricultural Research Center near Moccasin, discussed pea and lentil variety evaluations.

Lamb and Neill further discussed crop fertility studies with both canola and camelina.



Other Agronomic Research:

Mike Schuldt, MSU Extension Agent for Blaine County at Chinook, showed and discussed winter and spring cereals best suited for livestock forage use.

Dr. David Weaver, Research Entomologist with the Land Resources & Environmental Sciences (LRES) Department, presented an update on research steered toward potential newer breakthroughs in the management of the wheat stem sawfly. Sawfly damage results in tens of millions of dollars loss annually to Montana wheat producers.

Dr. Rick Engel, Soil Scientist with the LRES Department, and Jeff Whitmus, Research Assistant at NARC showed and discussed new research equipment developed specifically to assess the gaseous losses of ammonia nitrogen that may result from surface broadcast application of urea fertilizer to Montana crops.

Kim Falcon, Executive Vice President for the Montana Wheat and Barley Committee explained how the Overseas Variety Assessment (OVA) plantings at Havre are used to promote the marketing of quality Montana wheat through foreign exports.

Gregg Carlson, NARC Agronomist, briefly reviewed preliminary work with spring wheat variety blends and discussed a pending new wheat stem sawfly-resistant spring wheat line coming out of the MSU spring wheat breeding program.

Although not scheduled as formal stops, tour participants saw foundation seed fields of **'Hockett' malting barley, 'Vida' spring wheat, 'Fortuna' spring wheat, and NARC's historic "94-year Continuous vs. Alternate Cropping" plots of dryland winter wheat, spring wheat and corn via drive-by observation.**

Pending New Facilities at NARC:

NARC was also excited to show field day attendees the up-do-date plans for approximately \$1.8 million in new facilities scheduled to be built at the research center. The first and largest of three proposed new facilities, an office/meeting/laboratory facility, is currently going out for

construction bids. Bid solicitation for a calving and livestock operations barn will follow shortly. Additional matching fund contributions (\$5 in construction funding for each contributed dollar) are still needed to complete all proposed projects. Individuals, businesses or organizations interested in contributing matching funding may contact Gregg Carlson at the research center for further details.

Frank Schoonover, Chairman of the Montana Wheat and Barley Committee Board of Directors, Dr. Mal Westcott, Head of MSU's Department of Research Centers, and Dr. Jeff Jacobsen, Dean of MSU's College of Agriculture and Director of the Montana Agricultural Experiment Station addressed the crowd during the noon lunch program.



Further details about NARC's Field Day 2009 are available by calling the center at 265-6115 or via E-mail to Gregg Carlson at gcarlson@montana.edu.

Central Ad Research Center

By Dave Wichman

The 2009 Central Agricultural Research Center field day was July 9th. It was a beautiful, sunny, calm day that was preceded by two rainy days over which 0.93 inches of precipitation was received. Cereal grain variety development, specialty crops and cropping systems research were featured in the field plot tour. The field day included a youth program concurrent with the traditional field plot tours. The goal of the youth program is to recruit more of our youth into agricultural careers. While the spring precipitation was much below

average, down 4.5 inches since May 1, the crops look fair to good. Cool night time temperatures had apparently improved water use. One hundred and fifteen participants registered for the event.

The CARC field day presenters list reflects the team work that occurs between scientists across locations. Tom Blake, Luther Talbert and Phil Bruckner each presented on the barley, spring wheat, and winter wheat, respectively, breeding program goals, new public and private varieties and progress on developing new lines for the grain industry.

Mary Burrows discussed crop diseases and presented disease infected cereal, pulse and oils specimens to the audience to help them recognize the diseases in their own crops.



"Mary Burrows sharing information about plant disease with attendees of the Central Ag Research Center field day in Moccasin"

Grad student Max Burgess compared calorie inputs and out puts of no-till and tillage crop production systems. The producers like the idea that wheat provides a good return on the calories invested in production. Another grad student, Peter Zuck, shared his findings on a pest too small to see with a regular microscope - root lesion nematode, *Pratylenchus neglectus*, which was first identified at the CARC in 2005. Root lesion nematode has since been found in the native range at CARC. Peter also was a presenter for the youth field day program.

Chengci Chen reviewed the camelina production research that has been conducted by MAES over the past five years. Chen further discussed camelina in crop rotation

research, along with other crop rotation research and.

Pulse crop variety development and cereal forage developments were covered by Karnes Neil and Dave Wichman, respectively.

Grain and forage producers are keenly interested in the economics of applying fertilizer, due to the high fertilizer prices, and Clain Jones addressed that subject along with the pros and cons of investing slow release fertilizers.

Ag Dean/MAES Director Jeff Jacobsen **summarized 2009 legislature's actions and their impact on MAES.**

The CARC field day youth program was directed by Judith Basin Extension intern, Nikki Bailey, and she was assisted by Peter Zuck, Clain Jones, Luther Talbert, Dave Phillips, **Terry Metcalfe, and Shawn 'Tater' Erickson.** The students were exposed to the process of finding and identifying soil nematodes, crop and weed species and identification, examining a soil pit, simulated soil erosion, soil water percolation, and interactive role playing in the decision making and rulings relative to securing water use and 310 permit process. Thirteen youth ranging in age from 11 to 17 years of age participated.



Clain Jones and Terry Rick, both from the LRES Department, explain the uses and value of soil to young students at the CARC field day.



**New Graduate Students
Alanna Schlosser –
Mike Giroux**

Hi, my name is Alanna Schlosser. I'm from Conrad, Montana and I

enjoy hunting, camping, fishing, and other outdoor activities. I recently graduated with a B.S. in Plant Biotechnology from MSU. My research under Mike Giroux will be focused on starch biosynthesis in maize and rice.

Note of Thanks

Plant Sciences Department: Thank you all for your kind and supportive condolences during this difficult time. Nancy Blake, Tom and Vic Blake

Grants

Burrows, M. and S. Arnold. 2009. Assessment of pesticide use and barriers to IPM implementation by landscape professionals in Montana. EPA-PESP. \$50,000.

Publications

Szücs, P., Blake, V.C., Bhat, P.R., Chao, S., Close, T.J., Cuesta-Marcos, A., Muehlbauer, G.J., Ramsay, L., Waugh, R., Hayes, P.M. (2009) An integrated resource for barley linkage map and malting quality QTL alignment. *The Plant Genome* 2: 134-140. This article is open access and available at : <http://plantgenome.scijournals.org/content/2/2/134.full>

Dunkel, F.V., G. DeFoliart, D. Gracer. *The Food Insects Newsletter*: Chronicle of a Changing Culture. Aardvark Press. 385pp.

Burrows, M., Franc, G., Rush, C., Blunt, T., Ito, D., Kinzer, K., Olson, J., O'Mara, J., Price, J., Tande, C., Ziems, A., Stack, J. 2009. Occurrence of viruses in wheat in the Great Plains region, 2008. Online. *Plant Health Progress*. doi:10.1094/PHP-2009-0706-01-RS.

**Answers to Your Horticulture Questions
By Toby Day**

Demystifying Blossom End Rot



Every year Extension agents and garden centers across Montana get the question "What is wrong with my tomatoes?" The customer will explain

about the "hole" or "rotting" area of their prize fruit. Without hesitation, the agent or

garden center employee will explain that they have blossom-end rot and that it is caused by a calcium deficiency.

Blossom-end rot causes darkened water-soaked areas that are often sunken and leathery in appearance at the bottom of the fruit of tomatoes, eggplants, and sometimes peppers and melons.

Instantly, the customer asks about ways in which they can add calcium to their soil when the agent or garden center employee says "it is caused by inconsistent watering." This is when I wish I had a camera to photograph the inquisitive, and yet frustrated look of the customer. And, I know what the customer is thinking: What does watering have to do with a calcium deficiency?

I've searched for ways to explain the phenomenon so that the customer can understand (and sometimes the agent and garden center employee) the connection between inconsistent watering, the calcium deficiency and why their tomato has ugly formation.

Here is what I usually say: Nutrients, such as calcium, are dissolved in water and are taken up through the roots through transpiration (transpiration sometimes needs **to be explained, but we'll save that for another day**). When the plant is water stressed, the water is moved up to the leaves because they transpire much more than fruit. When the water exits the plant (again through transpiration) the calcium is deposited in the leaves and not in the fruit (the fruit is usually last to get the calcium). Once it is deposited, it remains in the leaves and is deficient in the fruit.

Without calcium, the area of the fruit that rapidly grows – the bottom of the fruit - is missing one of its main components for cell building. Calcium is important for cell wall development and integrity. Building a cell wall without calcium is like building a brick wall without mortar (or in the case of Leon Johnson Hall, without the right fired brick). The wall falls or crumbles or in the case of the tomato, the end of the fruit is then blemished.

So, giving even, consistent water to your tomatoes, especially potted tomatoes, will help keep the calcium moving to the fruit and thus reduce blossom end rot.

In some cases, there is more that is going on to cause blossom end rot. However, in the field where agents and garden center employees handle the majority of the questions about blossom-end rot, the major problem is inconsistent watering.

Bob's Byte By Bob Johnston Go back to the future with Compatibility View

In the bad, not-so-old days before Internet Explorer followed Web standards as closely as it does now, many Web developers designed their sites to display correctly in Internet Explorer, using IE's proprietary layout methods. In IE8, these sites typically display with some elements overlapping others or with similar layout errors. Make those sites appear as their designers intended by using **Page/Compatibility View**. You can make IE8 always display a site in Compatibility View by adding its address to **Page/ Compatibility View Settings**. Microsoft maintains a list of sites that need Compatibility View, and IE8 automatically switches to Compatibility View for sites on the list. You can tell if you're visiting one of those sites: Compatibility View will be grayed out on the Page menu. If you don't want IE8 to turn on Compatibility View automatically, go to **Page/Compatibility View Settings** and clear the check box next to **Include updated website lists from Microsoft**. The list is updated monthly, and you can find the current list (in Excel format) by searching the Web for "Windows Internet Explorer 8 Compatibility View List." The download page should be near the top of the list of hits.



Thanks to PCMagazine for this hint – rhj.

Recipe of the Month

Crispy Cucumbers and Tomatoes in Dill Dressing

1/4 cup cider vinegar

1 teaspoon white sugar

1/2 teaspoon salt
1/2 teaspoon chopped
fresh dill weed
1/4 teaspoon ground
black pepper
2 tablespoons
vegetable oil
2 cucumbers, sliced
1 cup sliced red onion
2 ripe tomatoes cut into wedges



In a large bowl, mix the vinegar, sugar, salt, dill, pepper, and oil. Add cucumbers, onion, and tomatoes. Toss, and let stand at least 15 minutes before serving.

August Birthdays

Barry Jacobsen	6
Thamir Al-Niemi	6
Yukiko Naruoka	6
Al Scharen	9
Mike Ivie	16
Amber Robbins	20
Jean Allen	23
Peter Suci	24
David Sands	30

