Roundup Ready sugar beet analysis earns *Reflections* magazine’s top award

What would happen to producer profits if Roundup Ready sugar beet technology was no longer available and how facilitators help Wyoming citizens make group decisions received first and second places in the 2013 *Reflections* research magazine.

*Reflections* highlights research in the college and is a publication of the Wyoming Agricultural Experiment Station (AES). An anonymous group of faculty members and researchers in the college rank the articles.

**Sweetened Profits**

Scientists in the Departments of Agricultural and Applied Economics and Plant Sciences found that producers who use Roundup Ready sugar beet seed, and assuming a 2-ton per acre increase because of the technology, gain on average $95 per acre more than if low-cost, conventional tillage and seed was used. If a producer utilizes high-cost, conventional production practices, the Roundup Ready system is $107 more profitable without any yield increase and $223.73 more profitable if assuming a 2-ton/acre yield increase for the Roundup Ready system.

Authors are Associate Professor Chris Bastian, Assistant Professor John Ritten, and research scientist Brian Lee, who is based at the James C. Hageman Sustainable Agriculture Research and Extension Center, in the agricultural economics department, and Assistant Professor Andrew Kniss in plant sciences. They will share the $1,000 award for first place.

**Meaningful Meetings**

Implementing methods to ask questions, planning dialogue, and helping members reach decisions as a group is a goal of a facilitator. Tara Kuipers, community development educator with University of Wyoming Extension, found those participating in facilitated sessions:

- Better understood what was to be accomplished,
- Were more interested and engaged,
- Interacted openly and productively,

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Roundup Ready sugar beet analysis earns *Reflection* magazine’s top award (continued from page 1)

- Thoroughly addressed agenda items, and
- Felt satisfied with the outcomes.

Kuipers is based in the Cody extension office. She will receive $750 for the second-place award.

Other research stories in the magazine examine:
- High tunnel efforts to increase vegetable production,
- The relationship between amphibians in Wyoming and beaver,
- How long-term research benefits agricultural producers,
- How a legume-grass mix can increase field productivity,
- If sainfoin is glyphosate resistant,
- The best cool-season perennial grass for Wyoming,
- The best drought-tolerant turfgrass,
- How state and federal researchers study effects of new pesticides at reduced rates,
- How citizens can become engaged in scientific discovery, and
- Whether or not using remotely sensed data can help producers determine what areas of their fields are less productive and at what time in the season productivity is lowest.

*Reflections* will be available at UW research and extension centers at Powell, Sheridan, Laramie, and the James C. Hageman Sustainable Agriculture Research and Extension Center near Lingle, and at UW Extension offices. Copies can also be obtained via mail after mid-June by calling the AES office at 307-766-3667 or at aes@uwyo.edu

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**UW faculty member, grad student receive NACTA teaching awards**

Melanie Murphy, assistant professor in the Department of Ecosystem Science and Management, and Emily Melson, a graduate student in the Department of Animal Science, have received the North American Colleges and Teachers of Agriculture (NACTA) Teaching Award of Merit and Graduate Student Teaching Award, respectively.

Donna Brown, associate dean and director of the Office of Academic and Student Programs, presented the awards to Murphy and Melson in May.

The college has an institutional membership in NACTA and has the opportunity each year to recognize a faculty member and graduate student for achievement in teaching.

John Tanaka, head of the Department of Ecosystem Science and Management, nominated Murphy.

“In her short time here, she has put extraordinary effort into becoming a better teacher,” says Tanaka. “I believe she is succeeding in that endeavor.”

Murphy received a bachelor’s degree in wildlife resources in 1998 and a master’s degree in wildlife resources in 2001 from the University of Idaho. She received her Ph.D. in zoology from Washington State University in 2008 then joined the UW faculty in 2010.

Tanaka says Murphy has developed an innovative graduate course taught by faculty members at three international institutions, and she is exploring the possibility of developing an exchange-type course with a university in Mexico.

Tanaka also notes a high level of student respect for Murphy.

“She is excelling in mentoring graduate students,” he says. “I know her students have the utmost respect for her.

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They even nominated her for the UW Distinguished Graduate Faculty Mentor Award. In my experience, that is a pretty rare event for a pre-tenured faculty member working with her first graduate students.”

**Graduate Student Teaching Award**

Doug Hixon, professor and head of the Department of Animal Science, nominated Melson.

“I have been extremely impressed by Emily’s maturity and strong work ethic,” says Hixon. “She is very bright and exhibits excellent communication and interpersonal skills. She is also very conscientious and caring.”

The 24-year-old Melson, a native of Fayetteville, Arkansas, will graduate this fall with a master’s degree in animal science. She plans to pursue a teaching career in animal science or life sciences.

“I was stunned, to be honest,” says Melson. “I didn’t expect to be awarded such a great opportunity, and I’m honored. It just blew my mind.”

Melson arrived at UW in the fall of 2011 after completing her bachelor’s degree in agricultural science at Southern Arkansas University in Magnolia, Arkansas.

She taught the Animal Science 1010 lab, Livestock Production, during her first semester at UW then landed a competitive graduate assistantship, acquired jointly with the Life Sciences Program, in the fall semester of 2012. Her GA enabled her to begin earnestly mentoring undergraduates.

“She has a sincere desire to help students learn and to share her knowledge,” says Hixon. “When she taught our ANSC 1010 lab in the fall of 2011, she was always keenly prepared and willing to spend extra time to help students understand the materials.”

In fall semester 2012, Melson taught two laboratory sections of LIFE 1010, General Biology, and, after another GA dropped out due to health issues, taught an additional LIFE 1010 lab with 24 students half way through the semester. In all, Melson taught 72 students during fall semester.

“You have all these diverse students with different backgrounds, and it’s sometimes challenging to connect with students who are not in your own field,” says Melson.

During the second half of the semester, she spent more than 40 hours a week preparing and delivering nine hours of in-class laboratory instruction, grading lab exercises and quizzes, and satisfying the requirements of her own graduate program.

“There were a lot of sleepless nights, but I always tried to put students first,” she says.

Hixon says Melson’s efforts greatly exceeded the standard requirements of a GA.

“I was concerned that she wasn’t being paid for this extra work load, and her response was that she considered it ‘trial by fire,’” says Hixon. “More than any graduate teaching assistant that I’ve known in my 31 years at UW, she deserves the recognition of the NACTA Outstanding Graduate Assistant Teaching Award of Merit. She is a special ‘scientist in training’ who will always excel in the classroom.”

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**Monies Awarded**

- **Gatlin, Jesse:** $237,865 from National Institute of General Medical Sciences for “Mechanics of Bipolar Mitotic Spindle Assembly Year 2.”
- **Lake, Scott:** $16,950 from various sponsors for “Research Laboratory Expenses.”
- **Larson-Meyer, Enette:** $143,000 from NIH for “FY13-14 INBRE Project 5.”
- **Liberles, David:** $357,500 from NIH for “FY13-14 INBRE Bioinformatics Core.”
- **Mesbah, Abdel:** $2,450 from BASF Corporation for “BASF Herbicides for Weed Control in Dry Beans,” $14,000 from Western Sugar Cooperative for “Effect of Phosphorus Rate and Formulation on Sugarbeet Yield,” $4,550 from DuPont for “DuPont Products for Weed Control in Barley,” and $3,500 from Harris Morgan Seed Company for “Radish Variety Trial.”
- **Mount, Dallas,** Aaron Berger, Brent Plugge, and Jack Whittier: $4,439 from various sponsors for “Program Income for Tri-state Ranch Practicum.”
- **Murphy, Melanie:** $24,415 from Wyoming Game and Fish for “Identifying Restoration and Land-use Priorities for Sage-Grouse Phase II.”
- **Murphy, Melanie, and Beth Fitzpatrick:** $500 from Sigma Xi for “Effects of Landscape Change on Greater Sage-Grouse.”
- **Murphy, Melanie,** Wendy Estes-Zumpf, Douglas Keinath, and Julia Polasik: $34,359 from Fish and Wildlife Service for “Captive Breeding of Wyoming Toads.”
- **Raisbeck, Merl:** $200 from various sponsors for “Miscellaneous Analysis.”
- **Ward, Naomi, and Heather Rothfuss:** $11,494 from University of Calgary for “Engineering a Strain of D. radio-durans R1 to Harbor the Optimized Gene XP13-4a (“The Xenotext”).”
About 50 scientists heard 10 presentations during the third-annual Front Range Cytoskeleton Meeting Wednesday, May 22, hosted by the Department of Molecular Biology.

The meeting was the first at UW. Those attending were from the UW Department of Molecular Biology, Colorado State University, Colorado University – Boulder, Colorado University – Denver (Anschutz Medical Center), and the Stowers Institute for Medical Research, Kansas City, Missouri.

The meeting was organized by molecular biology Assistant Professor Jay Gatlin and Professor and interim chairman Mark Winey of Molecular, Cellular and Development Biology of Colorado University – Boulder.

“The event was established to promote the exchange of ideas and to share findings amongst the growing number of researchers who are conducting cytoskeleton-related work along the Front Range,” says Gatlin. “I particularly enjoyed the seminars this year as we expanded the selection of speakers to include post-docs and graduate students as opposed to exclusively principal investigators, as had been done in years past.”

Presentations included “A novel filament forming protein in bacteria is responsible for organizing the cytoplasm” by UW Assistant Professor Grant Bowman, and “Changes in cytoplasmic volume drive mitotic spindle scaling” by UW graduate student James Hazel.

Presenting posters from UW were Paul Mooney and Lisa Edens, graduate students in the Molecular and Cellular Life Sciences Program, and recent molecular biology student Xiaoyang Li.
Mining, reclamation association meeting first in Wyoming since 2007

Mining and reclamation industry representatives will converge on Laramie for a joint conference at which organizers say they hope to boost knowledge and share information industry-wide.

Registrations are at 320 and increasing for the meeting of the American Society of Mining and Reclamation (ASMR) and the Wyoming Reclamation and Restoration Center (WRRC) June 1-7 at the Hilton Garden Inn.

“It is one of the largest professional reclamation conferences in the world, and it’s indicative of the important role Wyoming plays in the field of land reclamation and ecosystem restoration in the United States,” says Pete Stahl, director of the WRRC.

In 2007, Gillette hosted the most-recent ASMR meeting in Wyoming.

More than 80 Presentations

UW reclamation and soils specialists are helping organize and shepherd more than 80 presentations and various tours during the conference.

Pre-conference workshops are Saturday and Sunday, June 1-2, and presentations begin Monday. Governor Matt Mead and Frank Galey, dean of the College of Agriculture and Natural Resources, will address conference participants.

WRRC faculty and staff members planned the field trips, the scientific program, and the social events.

Theme for the conference is “Reclamation Across Industries.”

“Wyoming is the leading producer of many natural resources, which require reclamation after the resource is extracted,” says Stahl. “In the past, there has not been much communication among these different industries. We are trying to bring these different groups together to share information and knowledge to the mutual benefit of all.”

Graduate Research

In addition to industry presenters, UW graduate students will present research results.

“It’s extremely relevant, and much is funded by the industry,” says Stahl, a professor in the Department of Ecosystem Science and Management. “The WRRC has identified problematic areas in reclamation with industry and has designed research to address these problems. Much of it is being carried out by graduate students.”

The tour of the Wamsutter Gas Field is Tuesday, and the Powder River Basin energy tour is Friday and Saturday, June 7-8.


UW researcher studies anti-cancer resource found in Big Horn Mountains

Wyoming’s Big Horn Mountains contain a valuable resource that could help fight cancer.

Valtcho Jeliazkov, director of the University of Wyoming’s Sheridan Research and Extension Center, found that accessions (members of a plant collection in a particular location) of Rocky Mountain juniper and creeping junipers contain relatively high concentrations of podophyllotoxin (PPT), which is a chemical used to facilitate production of the anti-cancer drugs etoposide, etopophos, and teniposide.

“Those drugs are used to treat lung and testicular cancer, neuroblastoma, hepatoma, and other tumors,” notes Jeliazkov. “Other derivatives of PPT are used to treat psoriasis and malaria and are being tested as a treatment for rheumatoid arthritis. PPT has also demonstrated antiviral activity.”

Jeliazkov must conduct more research.

“We do not know if the junipers in the Big Horn Mountains contain the highest amount of PPT,” says Jeliazkov. “We are sampling other areas of Wyoming and in other states. This is a continuing project; we might find accessions with higher PPT concentrations elsewhere.”

Jeliazkov and Lyn Ciampa, an undergraduate student at Sheridan College and UW, collected samples of Juniperus in 2011 and 2012 at elevations from 4,500 feet to 10,000 feet.

Representative subsamples were identified by Bonnie Heidel, a botanist at UW’s Wyoming Natural Diversity Database, and deposited in the UW Rocky Mountain Herbarium.

PPT is currently extracted from the Himalayan mayapple (Podophyllum hexandrum Royle), which is an endangered species in Asia.

Jeliazkov will continue his bioprospecting work in the Big Horn Mountains and beyond this summer after the snow recedes.

“Our goal is to develop juniper cultivars for commercial production of podophyllotoxin,” says Jeliazkov. “I believe we can develop a cultivar for commercial production of podophyllotoxin.”

Professor Pete Stahl
Summer strategy

Twenty-three members of mosquito control and weed and pest agencies across Wyoming attended the annual mosquito larval control and West Nile virus prevention training last month in the college.

Assistant extension entomologist Scott Schell helped coordinate the program. Keith Wardlaw, City of Laramie Mosquito Control crew supervisor, also assisted.

Participants learned to survey and collect mosquitoes pre- and post-treatment, larval and adult control techniques, identify the primary West Nile virus vector *Culex tarsalis*, and testing West Nile virus presence in mosquitoes.

Rolando Fuentes of the Uinta County Mosquito Control says the training was highly effective.

“There’s a lot of procedure that comes with working with possible infectants,” he says. “To what I do in my job, I think it’s something you need to know and need to have a good knowledge base. I think these two days have given me a good knowledge base of how a mosquito control program should be run.”
Proposals Submitted

Bastian, Chris, Owen Phillips, Amy Nagler, and Benjamin Cook: $454,031 to U.S. Department of Agriculture (USDA) National Institute of Food and Agriculture (NIFA) for “Risks and Policy Incentive Impacts on Agent Behavior in Agricultural Markets.”

Islam, Anowar: $24,000 to Wyoming Department of Agriculture (WDA) for “Evaluation of Kinwa for Adaptation to Wyoming.”

Jarvis, Donald: $1,415,000 to National Institutes of Health (NIH) for “Glycoprotein Processing in the Baculovirus-insect Cell Expression System.”

Jarvis, Donald, and Tony Schountz: $249,925 to NIH for “Factors Governing Immunopathology, Persistence or Clearance of New World Hantaviruses,” and $249,925 for “Host Responses of Artibeus Bats Infected with Tacaribe Virus or HuCoV-EMC Coronavirus.”

McLeod, Donald, Benjamin Rashford, Steven Prager, Roger Coupal, and Scot Lieske: $499,833 to USDA NIFA for “Determining the Relationship between Development Pattern and the Costs of Public Services.”

Mesbah, Abdel: $6,600 to Wyoming Sugar Company for “Weed Control and Variety Testing in Sugarbeets,” and $4,800 to Bayer for “Bayer Products for Weed Control in Barley.”

Pasley, Christine: $20,000 to WDA for “Preserving Wyoming’s Specialty Crops Safely.”

Rashford, Benjamin: $71,368 to Western Association of Fish and Wildlife Agencies for “Mitigation by Design in Wyoming: Making the Connection between Habitat, Disturbance, Restoration and Resource Economics.”

Taylor, David: $35,382 to Booz, Allen, Hamilton for “Economic Impact of Sage-Grouse Management Alternative for Six BLM Field Offices and Three USFA Units.”

Afternoon sessions at Sheridan College for producers and for homeowners follow crop variety trial tours in the morning near Wyarno during the Sheridan Research and Extension Center (ShREC) Field Day Saturday, June 15.

Registration begins at 8:30 a.m. and the welcome, introductions and tours are 9-11 a.m. at the Wyarno site seven miles east of the Sheridan Information Center on 5th street, notes Valtcho Jeliazkov, ShREC director.

Tours include reclamation projects, a reclamation project using coal-bed methane water, alfalfa variety and saffoloin trials, a homeowner turfgrass demonstration trial, trials with oilseeds for biodiesel production, and organic gardens. Also toured will be high tunnel grape production and the apple orchard.

The venue then switches to the Sheridan College Science Center building for a tour of the Adams Ranch forage trial and vineyard, and also forage, oilseeds, specialty crops, and sugar beet trials close to the science building. Lunch will be provided to anyone who registered at Wyarno or who RSVPs in advance, says Jeliazkov. RSVPs are requested by Monday, June 10, by calling (307) 737-2415 or by email at shrec@uwyo.edu.


Sessions for producers and homeowners start at 1 p.m. The 20-minute sessions are followed by five-minute question-and-answer periods.

**Farmer/rancher sessions** include: forage weed control; hay yield of cool-season grasses with nitrogen application; grasshopper control; establishment of alfalfa; irrigation scheduling of forage; solar-powered livestock watering systems; range management; and reclamation of disturbed or degraded rangelands.

**Homeowner sessions** include: growing grapes and wine production in Wyoming; edible landscaping with small fruits and berries; drip irrigation systems for small vegetable farms; fruit trees in Wyoming; backyard composting; extending the season with high and low tunnels; and landscaping with perennials.