



# Ag Link



Spring 2000

Linking the MSU College of Agriculture with its Alumni and Friends

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## Animal and Range students have "hands-in" experience in spring calving

The course description said it was a "hands-on" class. But "hands-IN" better describes what 28 MSU College of Agriculture students did this spring, as part of a class in the Animal and Range Sciences Department.

"After you've been elbow deep in a cow at 4 a.m., nothing really scares you," Missy Merrill of Ennis said of her calving experience.

Monica Mantell, a senior from Jefferson City said, "Up to my elbows in cow wasn't the hardest part... when you're trying to make sure all of the calves are okay and then you see one die, it breaks your heart."

Both worked on the Dean and Trudy Peterson ranch near Judith Gap as part of the class.

Several ranches and organizations cooperated with MSU to give students not only the experience

of calving, but also the experience of collecting data for a breeding research study.

Other cooperators included the Jim Peterson ranch north of Buffalo, the Bair Ranch run by Jim and Deb Murphy east of White Sulphur Springs, the Krutzfeldt Ranch southeast of Miles City run by Bret Lesh, the Northern Agricultural Research Center and the American Simmental Association in Bozeman.

The research this spring involved about 900 calves at six sites, and student calving teams helped at four of those sites. Harv VanWagoner, whose master's research is comparing the calving ease of Simmental, Angus and Red Angus sires, said results should be available in the fall of 2000.



Missy Merrill and Kali Raffelson weigh a newborn calf.

For information, contact Ray Ansotegui at 406-994-5569.

## MSU scientists help bump smut from world wheat trade scene

Smut has a bad reputation. Concern about the plant disease caused by TCK smut has cost northwestern United States winter wheat growers their share of the Chinese wheat trade since 1972.

But research by MSU plant pathologists Don Mathre and Bill Grey has helped convince China that the threat is not great. Consequently, China has received a trial shipment of Montana winter wheat.

"I think China truly believed TCK smut was a threat to its wheat production and thought it could cause losses like the potato blight once did in Ireland," says Mathre, an emeritus professor of MSU's Plant Sciences Department.

About 1980 U.S. Wheat Associates invited a sci-

entist from China to work at Oregon State University and cooperate with scientists at other state universities. Zhihong Zhang worked in the United States for three years cooperating with Mathre and Grey, as well as scientists at Utah State University, Oregon State University and the University of Wyoming. This risk assessment work led to convincing the Chinese that TCK smut did not represent a threat to its winter wheat regions.

For information, call Don Mathre at 406-994-5157 or Bill Grey at 406-994-5156.



Don Mathre in his office

## From the Dean

**By Sharron Quisenberry**  
Dean of the  
College of  
Agriculture



As you may have heard, Ag Appreciation Weekend last November was very successful. We raised over \$13,000 for the College of Agriculture Student Activities Fund. We hope to do even better during Ag Appreciation Weekend 2000, which is scheduled for November 3-4, 2000. Sponsors for the 2000 Weekend are still needed. Sponsorships of the

Weekend's activities enable all proceeds to be directed to student activities. More information will be in the fall *AgLink*. Please plan to join us for a fun-filled weekend.

We are continuing with the strategic planning process. As always, we welcome your comments. One of our top priorities is to focus our educational and research programs to meet the needs of Montanans and use our resources wisely. The Department of Animal and Range Sciences has taken the first step toward this goal by hosting an external review team. The process was very positive and the team left the department with several excellent suggestions for refinement and

improvement of programs. For example, the department will be requesting the addition of a doctorate program to their curriculum, re-establishing judging teams and developing plans for a new Animal Bioscience Facility. Approximately 50 producers and commodity group representatives from around the state met with the review team. We would like to thank them for their valuable input.

As I look forward to my second summer in Montana, I hope to see many of you at field days and other activities across the state.

## Target.....Cancer Cells A Virus That Can Fetch and Deliver

Under Mark Young's tutelage, parts of a plant virus may help us as faithfully as a pet by fetching and delivering medicines.

The MSU plant scientist has learned how to open and empty the protein "cage" that is part of a cowpea virus. He can tell the empty cage to manufacture medicine or other material, and to open and release the medicine. Now he is adding a way to target where the virus cage delivers its contents.

The first target will be cancer cells.

Jack Johnson, a molecular biologist at Scripps Research Institute in La Jolla, Calif., says Young's research occupies a "unique niche in the world of material sciences. No one has used these particles as a container to do chemistry and crystalization before . . . It is an interesting and important new direction in both chemistry and material sciences."

Young's work makes a "tote-bag" out of something we can't see without a high-powered microscope. He plans to have the virus cage find cancer cells by latching onto their unique chemistry. If the protein cage accurately finds its way to targeted cancer cells, it could mean the difference between spreading chemotherapy throughout a body compared to sending it only where needed, says Young.

Several parts of the puzzle have been



Mark Young in his lab in MSU's Agricultural Bioscience Building.

reported in the scientific literature, including the journal *Nature*, the magazine *Discovery* and in chemical journals. Young says he plans to complete the targeting process and report on it in the year 2000.

For information, contact Mark Young at 406-994-5158.

## Don't miss Ag Appreciation Weekend 2000

Please plan to join us on Nov. 3-4, 2000 for Ag Appreciation Weekend 2000. Plans are underway for a tailgate party, Bobcat football game against Portland State, the Kiss-a-Critter contest at halftime, a raffle and a silent auction.

The weekend will wrap up with the Boots and Bow Ties Harvest Ball with music by Montana Rose.

Art depicting agriculture or natural resources is requested for the Juried Art Show by October 20, 2000. The divisions include black and white or color photography, water color, oil, pen or pencil sketch, and sculpture. There is no entry fee. The art will be on display in the Exit Gallery at the Strand Union Building.

We'll have more information in the September issue of *AgLink*.

## New Faces

**Lisa Graumlich** is the new director of the Mountain Research Center. She is a faculty member in the Land Resources and Environmental Sciences Department.

**Cathy Zabinski**, a restoration ecologist, recently joined the Land Resources and Environmental Sciences Department.

**Steve Keeley** is the new assistant professor of horticulture in the Plant Sciences Department. His specialty is turf grass science.

**Andreas Fischer** joined the Plant Sciences Department this spring. His focus is plant biochemistry.

**Wendy Stock** will join the Agricultural Economics and Economics Department in August 2000 as an associate professor to teach econometrics and the principles of macroeconomics.

## The Southern Agricultural Research Center makes a comeback

The new generation at the Montana Experiment Station's Southern Agricultural Research Center is rolling into its first production season with full staff.

The center was all-but closed for budget reasons in September 1995, though limited field studies were conducted there. After the 1997 state legislative session, planning began to reopen the center. Ken Kephart was hired as the new su-

perintendent, and he arrived at Huntley in February 1998.

Kephart was joined last fall by weed scientist James "Mick" Mickelson. The research team also includes research associates Peggy Lamb and Mike Particka along with farm foreman Tom Fischer. Together, they will address research needs based on input from area producers and fulfill their role in statewide research.

"We were charged by our advisory committee to make sure we have research programs that address production problems in established crops, so we have research programs that touch most aspects of crop production for south central Montana in both dryland and irrigated agriculture," says Kephart. Those crops include traditional irrigated crops such as sugarbeets and malting barley, in addition to dryland grains. Kephart has also implemented research on alternative crops, such as irrigated soybeans for the livestock industry.

Mickelson's research emphasis is integrated weed management for irrigated and dryland cropping systems. The problems of herbicide-resistant kochia in a sugarbeet/malt barley rotation is high on his list of research subjects.

"I'll try to find rotations and herbicides with different modes of action," says Mickelson. The potential of biological control of weed seeds by soil microorganisms is one of his personal interests that may also lead to new ways of helping Montana producers. Mickelson said he will be looking for soil organisms that attack weed seeds and evaluating cropping systems that help those organisms increase to a useful level.

A facelift is also underway at the center. Several older buildings that had near-constant maintenance needs have been torn down, and, though a new building program is needed, the absence of the old buildings will contribute to increased productivity and decreased maintenance costs, says Kephart.

For more information, contact Ken Kephart at 406-348-3400.

## Wider band width may increase wheat yields

Preliminary research shows that planting wheat in a wider band than usual increases yields and decreases wild oat competition. The study near Havre showed that a six-inch band width gives each seedling more space as compared to a four-inch band width, and thus a competitive advantage over wild oats in acquiring moisture and nutrients. Bob Stougaard, weed scientist at the Northwestern Ag Research Center, and Gregg Carlson, agronomist at MSU's Northern Agricultural Research Center, led the study. **Contact: Bob Stougaard at 406-755-4303.**

## Researchers develop GIS tool for predicting Montana growth

MSU researchers have developed a system that can help predict change in a community. Bruce Maxwell, Jerry Johnson and Richard Aspinall are entering information about past growth into a geographical information system to help predict future growth. The system can help planners, government officials and others "see" the future effects of growth and provide information to help them better plan for an area's future.

**Contact: Bruce Maxwell at 406-994-5717**

## Researcher studies automated grain cooling

MSU entomologist David Weaver is testing an automated fan system to reduce grain cooling time. Montana producers usually let grain cool unassisted, but it takes several months after harvest for grain bin temperatures to get low enough to curb insect reproduction. The automated fan Weaver is testing notes the outside air temperature and the grain temperature, and could save producers money by running only when it will cool the grain effectively.

**Contact: David Weaver at 406-994-7608.**

Carol Flaherty



Plant scientist Phil Bruckner (top) and other research center staff pitched in to dismantle a dilapidated building at the research center near Huntley.

## Field Days 2000

- June 28** — Mint Twilight Tour, NW Ag Research Center, Creston
- July 10** — Central Ag Research Center, Mocassin
- July 11** — Northern Ag Research Center, Havre
- July 12** — Southern Ag Research Center, Huntley
- July 13** — Williston Research Extension Center, Williston
- July 19** — Eastern Ag Research Center, Sidney
- July 21** — Western Ag Research Center, Corvallis

# Bison immune system focus of MSU brucellosis research

In the polarized topic of brucellosis in Yellowstone National Park bison, there's at least one thing about which many people agree: Resource managers need an effective vaccine for the shaggy beasts that have evolved into an icon of the American West.

But the key to a good vaccine, which would help Montana maintain its brucella-free status, is first to understand how the bison immune system works.

"There's no good grasp on how the immune system differs between cattle and bison," said David Pascual, a professor in MSU's Department of Veterinary Molecular Biology.

Two brucellosis vaccines exist for cattle, but they cause problems in bison, Pascual said. The vaccines can remain infectious in bison and can actually create a brucellosis reservoir among animals that don't have the disease.

The vaccines also pose a health hazard

to veterinarians and livestock handlers, a number of whom accidentally infect themselves each year when administering the live vaccines.

Pascual's approach is to mimic illness in bison as a way of pinpointing how the immune system is activated. He's using a modified livestock



David Pascual in his lab.

vaccine, for example, that mimics an infection by *E. coli* bacteria, except that the animals don't actually get sick.

"We're taking vaccines for which we understand the biology and how they cause disease and are following those to

see how they behave in bison," he explained.

Pascual wants to know how to stimulate the animal's mucosal lining in the nose, throat and gut, because that's where brucella infections chiefly occur, he said.

"So the broader issue is how to make the best form of the vaccine for protection and to develop a system to deliver a vaccine once we have one," he said.

Funded by the U.S. Department of Agriculture, the project is in its first year. Most of the research is done in Marsh Laboratory, which will soon have a special biocontainment facility that will enable Pascual to work with the pathogen.

A new agreement between MSU and Texas A&M University, which has large animal containment facilities and a history of brucellosis research, means that animal studies can be done there.

For more information, contact David Pascual at 406-994-4705.

## MSU prepares students for jobs in GIS/GPS mapping

Students seeking jobs in the field of GPS mapping, GIS or remote sensing may not have to look far.

GPS and GIS skills are in high demand, and there are lots of jobs in these fields right here in Montana, says Diana Cooksey, who teaches a GPS mapping course in the Land Resources and Environmental Sciences Department.

Ten out of 18 students in her '98 class got summer jobs last year doing GPS, she said.

One student went to work doing

fences, cattle guards and water troughs.

This kind of experience can help students compete for higher level jobs in the field, Cooksey says.

GPS refers to the Global Positioning System of satellites, which allows a person with a receiver to locate a precise position. With this data, which is provided free from the government, a person can use a GIS(Geographic Information System) computer program to capture, manipulate, analyze and map the data.

Students in the course use state-of-the-art GPS receivers and computers to work on their own mapping projects. Funding for the equipment was provided by MSU and a USDA Higher Education Challenge grant, says Chris Erlien, teaching assistant for the course.

Student projects have included mapping ski runs, avalanche paths and whitebark pine sites. One student mapped the Jefferson River for a planned May river trip. He was able to provide maps — which included hazards, river channels, eddies, camping spots and even pit stops — to the other people on the float.

"The students have lots of fun with this, because they get to design the projects they're interested in," says Cooksey.

As part of their final projects, the students produce maps "that can go into their portfolios to show potential employers," says Cooksey.

There's a large waiting list of students wanting to take the course. So, Cooksey and Erlien are offering a three-day GPS mapping workshop this summer to students and professionals. Because Cooksey is certified from Trimble Navigation as a GPS mapping trainer, she'll be able to offer certification to those who take the course.

Trimble Navigation, based in California, is a leading company in the GPS/GIS field.

In Montana many government agencies and private companies are working with GIS systems, and some with GPS. Job possibilities in the field include software development, programming, technical support, consulting, sales and mapping.

To learn more about MSU's GPS course, check out its web site at [www.montana.edu/places/gps](http://www.montana.edu/places/gps)

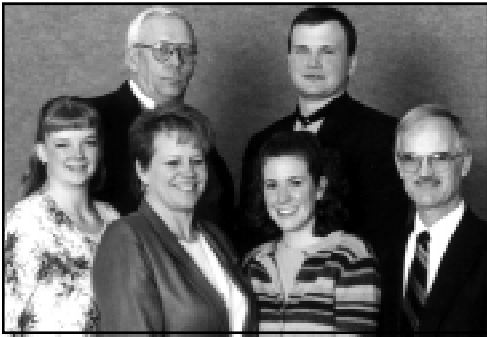


Diana Cooksey and senior Mike Larsen use a GPS receiver. Mike used GPS to map the MSU Post Farm west of Bozeman.

ing a 911 GPS mapping project for Gallatin County. Another student worked for the U.S. Forest Service as a range technician using GPS to map roads,

## Students, faculty cited for excellence

Three College of Ag students and two faculty members, chosen for having a significant impact on the students' education, were honored at the Award for Excellence Banquet 2000 on Feb. 22. The banquet was hosted by the Bozeman Area Chamber of Commerce and the MSU Alumni Association.



Top row, from left: Ray Ditterline and Jonathon Holman. Bottom, from left: Katie Logan, Becky Mattix, Melanie Higgins and Don Kress, interim associate dean of the college.

This year's recipients for the College of Agriculture were:

**Melanie Higgins**, majoring in biotechnology/ animal science, from **Great Falls**. Chosen faculty member: **Becky Mattix**, Department of Veterinary Molecular Biology.

**Jonathon Holman**, majoring in crop science/crop management, from **Choteau**. Chosen faculty member: **Ray Ditterline**, Plant Sciences Department.

**Katie Logan**, majoring in ag education with an English minor, from Salmon, Idaho. Chosen faculty member: **Becky Mattix**.



**By Sandra Germann**  
Director of Development

The College of Agriculture gives out more scholarships than any other col-

lege on campus!

This year, thanks to the generous support of the James E. and Marjorie Robertson Memorial Fund, 35 more students will be offered scholarships than in the past, bringing the total disbursed from the college to agriculture students to over \$151,000 for fall 2000.

Look for more information on the new Bayard Taylor memorial endowment, which will provide substantial assistance to graduate and undergraduate students.

Currently tuition, room and board, and book fees for the nine-month 99-00 school year are estimated at \$8,400 (in-state) and \$14,100 (out-of-state). These scholarships make a significant impact on students' lives as they work towards their college education. **The college sincerely thanks all donors for their generosity.**

The annual Agriculture Scholarship and Donor Appreciation Banquet was held April 21. Veterinarian comedian Baxter Black will perform after the dinner. Over 200 scholarship donors and recipients are expected to attend.

April 21 was also the first meeting of the College of Agriculture Development Board. The board consists of ag-industry leaders from all parts of the state. The group's function is to promote and support the college and assist in state-wide networking. Twelve industry leaders, the dean of the college and the development director will serve on the board.

*Sandra L. Germann*

**Class of '89 (BS), '91 (MS) AgEd/ Extension**

For information on ways you can contribute to college programs, contact Sandra Germann at 406-994-7671. Or check the college's web site at <http://www.montana.edu/agriculture/>

## James and Marjorie Robertson fund provides student scholarships

MSU ag students are the lucky beneficiaries of a new endowment from the estate of Ennis rancher James E. "Jimmy" Robertson.

Robertson, who died in August 1990, left 30 percent of his \$3 million estate to the MSU Foundation to set up the endowment. Called the James E. and Marjorie Robertson Memorial Fund, it will be used to fund scholarships for students in fields related to livestock and ranching.

For the upcoming school year, \$37,430 in student scholarships has been given from the Robertson endowment: 25 continuing students received \$700 each, while 10 incoming freshman received \$2,000 each.

Robertson owned and operated the Bar LG Ranch near Ennis since 1947. Marjorie died in 1979. James served on the Board of Directors of the First Madison Valley Bank of Ennis for 31 years.



## New endowments benefit Land Resources & Env. Science students

Two new endowments have been formed this year to help students in the Land Resources and Environmental Sciences fields, previously the Soils Department at Montana State University.

The Land Resources Stewardship Scholarship was recently set up by 1979 soils graduate, Sue MacAllister.

"With over 100 majors in the LRES Department, there are many students who are in need of financial support,"

says Jeff Jacobsen, LRES department head. "It is great to see alumni like Sue MacAllister coming forward with a gift like this. Many LRES students will benefit from these scholarships this fall that wouldn't otherwise have been given assistance, which is exciting!" says Jacobsen.

The \$100,000 endowment will generate \$5,000 in assistance to students who are sophomores and older this year.

*continued on page 6*

# Bug Fest 2000 a hit!



## Future Entomologist?

*Lanna Parker, a 5th grader from Morning Star Elementary School in Bozeman, is "wowed" by this Great Blue Morpho butterfly from Costa Rica.*

**A**welcome infestation of more than 5,800 people interested in insects made the Montana Bug Fest 2000 a "bug" success.

Michael Ivie, MSU professor of entomology, and one of the event's organizers, said 5,877 people, mostly elemen-

tary and secondary school students, attended the five-day insect festival held in the MSU Plant Growth Center April 10 - 15.

While the bulk of the visitors were from the Gallatin Valley, the event also attracted groups of students from as far away as St. Regis, Moore, Centerville and Lame Deer, he said. The event lured 1,500 more visitors than the inaugural event in fall 1998.

Ivie said the large crowds were particularly gratifying because volunteers from the entomology department dedicated countless hours to stage the event with minimal funding.

The event featured a butterfly house, insect and arthropod zoo, and displays of insects from around the world from the MSU Entomology Collection.

*For more information, contact Mike Ivie at 406-994-4610 or LaDonna Ivie at 406-994-2470.*

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## Land Resources Endowment

*continued from page 5*

MacAllister's hope is that others will contribute to the endowment to help it grow.

A second endowment has been set up by Gerald "Jerry" and LaVonne Nielsen of Bozeman. This endowment, called the Soil Landscape Dynamics Student Research Endowment, is intended to encourage students to study the soil landscape, where biosphere, lithosphere, atmosphere and hydrosphere interact.

Nielsen, a professor of soil science at MSU since 1967, hopes that others interested in soil science will join in support of this endowment.

*Donations to either endowment can be made to the MSU Foundation, naming the endowment, or by calling the College of Agriculture Development office at 406-994-7671.*



# Ag Link



Spring 2000

Linking the MSU College of Agriculture with its Alumni and Friends



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