

UW COLLEGE OF AGRICULTURE AG NEWS

VOLUME 14 • NUMBER 2 • SPRING 2005

Dear Friends and Colleagues,

We trust you are having a great spring. Though the winter has been dry, hopefully by the time you read this spring moisture will have arrived.

The Wyoming Brucellosis Coordination Team report was submitted to Governor Dave Freudenthal and the legislature in January. Thirty scientists, ranchers, wildlife enthusiasts, and state and federal officials made twenty-eight recommendations about the disease in cattle and wildlife.

The top recommendation is that Wyoming Game and Fish Department (G&F) officials, local landowners and managers, and state animal health experts convene to develop local Brucellosis Management Action Plans. These teams are to assess situations and develop strategies to minimize risk of transmission between wildlife and livestock around each elk herd unit. The second recommendation presses for research to address questions about the management and biology of brucellosis.

In August, the U.S. Animal Health Association, the U.S. Agriculture and Interior departments, and the University of Wyoming's Ruckelshaus Institute will host a workshop of leading scientists in Laramie to help identify research needs for brucellosis vaccination, vaccine delivery, and diagnosis.

An issue has arisen that could significantly impact your college. The proposed fiscal year 2006 and 2007 federal budgets eliminate formula programs that make up part of the federal-state land-grant partnership. These funds support important research in Wyoming including animal-health investigations and ag experiment stations. We are working with our congressional delegation to ask that this partnership be maintained.

In this issue, you will read about some of our efforts that benefit from the partnership. Articles highlight research about potatoes, grazing and range, and the lichen that likely caused a major elk die-off, as well as a new niche market comprised of yak meat.

We all suffered a terrible blow this winter with the loss of Professor Beth Williams of our veterinary sciences department and her husband, Tom Thorne, who was with the G&F for many years. Beth and Tom made lasting impacts on wildlife health. They will be remembered for their dedication, knowledge, productivity, and humor. In their careers, they achieved success by doing as Teddy Roosevelt suggested: everything they could, with what they had, where they were.

Thank you for your support. Please stay in touch with your College of Agriculture!

"Do what you can, with what you have, where you are."

Theodore Roosevelt



Dean Frank Galey

UNIVERSITY
OF WYOMING

Dean Frank Galey
College of Agriculture

FIRST CUTTING



Gray named 'Outstanding Hay Industry Advocate'

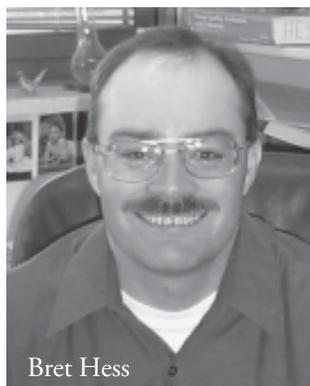
Powell Research and Extension Center Director **Alan Gray** was named "Outstanding Hay Industry Advocate" at the 2005 Wyoming Hay and Forage Expo in Casper.

"Alan has been the backbone of the development and growth of the niche-market hay industry in Wyoming since he came to the state nearly 19 years ago," says **Scott Keith**, livestock and forage program manager for the Wyoming Business Council in Casper.

"He has evaluated a wide range of alfalfa and grass varieties, assisted producers with production techniques to improve hay quality, and initiated the Wyoming Hay Hotline listing service, the Wyoming State Fair Hay Show, and most of the county hay

shows," says Keith, whose office helped organize the expo with the Wyoming Hay Advisory Committee. The committee includes hay producers, University of Wyoming Cooperative Extension Service educators, and the UW College of Agriculture's Department of Plant Sciences.

"Outstanding Hay Industry Advocate" was one of two major awards presented at the January 18-19 expo, which attracted approximately 170 people. Fremont County agricultural producers **Danny and Arlene Brown** received the "Outstanding Hay Producer Award."



UW study focuses on beef production

Increasing the efficiency of beef cattle production through strategic nutritional inputs is the goal of a research project being directed by **Bret Hess**, an associate

professor in the College of Agriculture's Department of Animal Science.

Hess says he and his associates intend to advance their current understanding of how dietary lipids affect mammary tissue lipid metabolism in beef cows.

They are hopeful the project will lead to the development of nutritional strategies that result in partitioning of nutrients to support economically important beef cattle production traits.

Co-investigators are Professor **Daniel Rule** and graduate student **Charles Murrieta** with the animal science department and Department of Statistics Assistant Professor **Timothy Robinson**.

The project, which is expected to run through September 2006, received funding from the Wyoming Agricultural Experiment Station's Competitive Grants Program for fiscal year 2005.



Fact sheets help Wyoming ranchers

A team of University of Wyoming rangeland management experts have written four fact sheets to help Wyoming livestock producers interested in improving their rangeland conditions and livestock operations.

The titles, publication numbers, and authors of the WYO Range Fact sheets include:

- "Monitoring: A Tool for Effective Rangeland Management," MP-111.02, by Professor **Michael Smith**, rangeland management extension specialist with the Department of Renewable Resources;
- "Flexible Grazing and Livestock Management Systems for Good and Bad Times," MP-111.03, by Smith and

Associate Professor **James Waggoner Jr.**, rangeland management specialist with renewable resources.

- “Grass Growth Basics I,” MP-111.04, by **Blaine E. Horn**, rangeland management educator for the Cooperative Extension Service (CES) in Johnson and Sheridan counties.
- “Livestock Grazing Distribution,” MP-111.05, also by Horn.

The four fact sheets are available on the College of Agriculture Web site at <http://www.uwyo.edu/ces/rangemgt.htm>.

Printed copies at \$2 each can be obtained by emailing the ag college’s Resource Center at bixby@uwyo.edu, calling the center at (307) 766-2115, writing to the University of Wyoming, College of Agriculture, Department 3313, 1000 E. University Ave., Laramie, WY 82071, or contacting a local CES office.



Jim Freeburn

Variety of projects planned at SAREC

Research relating to weed control, plant pathology, alternative crops, and livestock are among the projects scheduled this year for the new Sustainable Agriculture Research and Extension Center two miles west of Lingle, according to SAREC Director **Jim Freeburn**.

Freeburn also says that approximately 90 acres of forage for livestock grazing research will be planted, a rotational livestock grazing system implemented, and no-till crop practices started on the 3,400-acre farm.

The University of Wyoming purchased SAREC last year to broaden research opportunities previously available at the UW research and extension centers near Torrington and Cheyenne, which have been sold.

SAREC Farm Manager **Bob Baumgartner** says that corn, grain sorghum, millet, and wheat were planted last year. Those crops as well as foxtail millet and sunflowers are on this year’s list.

Studies at the center will focus on an integrated approach to managing farms and ranches, which could boost profitability of farms and ranches across the region while protecting the environment, says Wyoming Agricultural Experiment Station Director **Jim Jacobs**.



Mark Stayton

Researchers focus on altitude sickness in cattle

Ranching in Wyoming’s high elevations can be a challenge, particularly when a producer’s cattle are stricken by altitude sickness. A faculty and student team of University of Wyoming researchers hopes to develop

a diagnostic test based on gene expression that will help the state’s livestock enterprises curb the 3- to 6-percent calf crop losses they can face due to pulmonary hypertension disease, commonly known as “brisket.” In imported or lowland cattle, the losses can be much higher.

“It can mean the difference between profit and loss in some operations,” says Associate Professor **Mark Stayton** of the College of Agriculture’s Department of Molecular Biology. He is collaborating with Professor **Rich McCormick** of the Department of Animal Science and veterinarian **Tim Holt**, a faculty member at Colorado State University, on the project.

Their interest is twofold – a predictive test could help fight the fatal sickness, and a study of what happens to the enlarged heart of a brisket sufferer could have applications to human heart disease, their primary research focus.

Character, not color, makes for good

By Robert Waggener,
Editor

Office of Communications
and Technology

Had he grown up white instead of black, Dr. Taylor Haynes speculates he would have received more education.

That comment would likely shock those who know Haynes, who has a bachelor's degree in engineering, a doctorate in medicine, and real-life education in agriculture. How much more schooling could a person want?

Haynes is living proof that ethnicity doesn't matter when it comes to achieving goals and making a difference in one's community. In fact, Haynes preaches what he practices, telling others, "It's not about color, it's about character."

He then asks, "What was Martin Luther King's famous speech, 'I Have a Dream,' really about? I think it was about people being judged by the content of their character, not the color of their skin. It's about being honest and responsible, and it's about contributing to your community."



University of Wyoming Trustee, Cheyenne rancher, and retired physician Dr. Taylor Haynes discussed issues relating to blacks, including his family's roots in agriculture, during a seminar as part of the College of Agriculture series titled "Agriculture: Rooted in Diversity." The series is directed by ag college Associate Dean Jim Wangberg, background. Among the students in this semester's class is Ashley Garrelts of Torrington, a first-year graduate student in the Department of Renewable Resources.

Through an engaging smile and a captivating voice, Haynes says he has tried to live by the content of his character throughout his life, whether it was working on his parents' farm in the South, solving a complex engineering problem, performing surgery on a sick patient, making decisions in board meetings, or

raising cattle on his small ranch near Cheyenne.

"Ranchers, like other professionals, have obligations, and one of them is to be good stewards of the land and the resources," says Haynes, shortly after moving Hereford cows across a pasture of prairie-gold grass tinted with patches of crusted, wind-blown snow.

A couple of hours later, Haynes is on the campus of the University of Wyoming talking about everything from cows and cowboys to race and religion. On this particular day, he is the featured speaker in a series of public seminars that are part of a course titled "Agriculture: Rooted in Diversity," which is being offered this

ranchers, doctors, and engineers

semester in the College of Agriculture.

“My parents raised me to do the business and to be polite to everyone else. Once others can see that you can do the business and are polite, they are less defensive,” says the likable Haynes.

The course is taught by agriculture college Associate Dean Jim Wangberg, who is also director of Academic and Student Programs. Topics have included Basques who immigrated to northeastern Wyoming’s sheep country, agriculture in the Latino community, black Americans on the ranching frontier, Jewish farmers, and how American Indians survived off the land.

Wangberg says he and a team of UW faculty members collaboratively developed “Agriculture: Rooted in Diversity” with grants from the President’s Advisory Council on Minorities and Women’s Affairs, the UW American Heritage Center, and the Wyoming Council for the Humanities. The course attracted a broad range of undergraduate and graduate students from across the UW campus and

an equally varied group of guest lecturers from throughout Wyoming and the region.

“It is for students with interests in ethnic studies, multicultural affairs, women’s studies, museum science, and the history of agriculture, specifically those aspects that chronicle the experiences of diverse groups in agriculture,” Wangberg says. “The focus is on Wyoming agriculture but within the larger context of ethnic and women’s studies nationally and internationally. As the course title suggests, diversity is a unifying theme.”

In introducing Haynes to the students and a small number of visitors, Wangberg emphasizes, “I have been particularly grateful for Dr. Haynes’ contributions to the university and the College of Agriculture. He is an agriculturist who cares about our college, and he has contributed in countless ways to the agricultural industry as a whole.”

Haynes is a UW trustee, regional vice president of the Wyoming Stock Growers Association, and

past president of the Laramie County Stock Growers Association and Pole Mountain Cattlemen. “Holding those kinds of positions are a huge compliment to me,” Haynes says, pointing once again to a person’s integrity.

The 58-year-old Haynes grew up on a produce farm in Louisiana, learning what a hard day’s labor meant as he sweated in fields of watermelon, cantaloupe, sweet corn, yams, and cotton. “If you ever need inspiration to finish your academic careers, try picking cotton. Doing it by hand is just an awful job,” he remarks.

And then there was the task of hauling 200-pound logs for pulp. “Boy, am I going to go to school!” Haynes recalls telling himself after getting sick and tired of the strenuous work, which was made even more difficult because of the

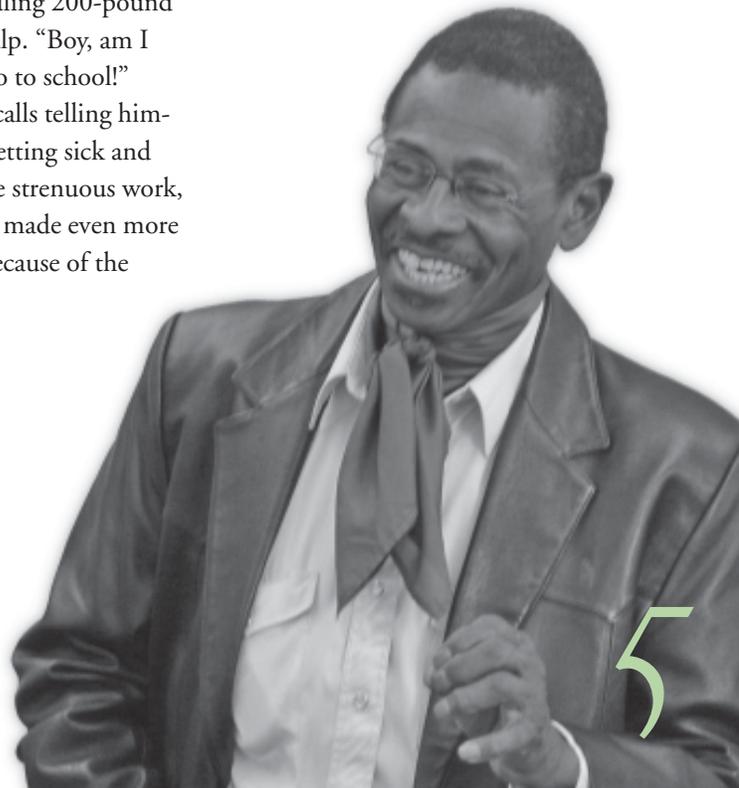
South’s high humidity and blistering temperatures.

“I remember telling Dad that when I grew up, there was no way on this earth that I was ever going to have dirt on my boots and mud in my cuffs. I told him I was going to have shiny shoes and clean clothes,” he says.

Smartly dressed in a white shirt, bright blue silk neckerchief, black leather jacket, and pressed blue jeans, Haynes, of course, says he told that to his father in a “very nice way” as he and his siblings grew up to respect not only their parents but others, regardless of their race.

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Dr. Taylor Haynes makes a point to students and guests attending one of the “Agriculture: Rooted in Diversity” classes in the College of Agriculture.





Dr. Taylor Haynes moves a Hereford cow across his ranch west of Cheyenne.

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Haynes attended a religious high school, and he says that's when he developed a love for math and science, an interest in pursuing a degree in engineering, and, most importantly, confidence in himself.

"The nuns were very good about helping you with your weaknesses, but they really knew how to push your strengths," says Haynes, reflecting on the time he consciously thought about the qualities of his own character versus the color of his skin. "I was convinced the Lord loved me as He did everyone else."

Like many young people who grow up in rural

areas, Haynes wanted to experience city life so he went to Baton Rouge, Louisiana, where he pursued a degree in mechanical engineering. "I didn't know any black engineers at the time but I loved science and math, and I had no doubt I could become an engineer. Plus, it will get me to the city," he remembers of his decision.

After graduating from Southern University in 1969, Haynes was hired by Kennecott Energy Company and relocated to Salt Lake City, Utah.

"The first day at Kennecott was exciting. I was finally being paid to work on my first love in en-

gineering, a combined problem involving thermodynamics and transient heat transfer. Computers were a new tool at that time, and we wrote our own programs. I was the only engineer in our department proficient in Fortran, one of the first really useful machine languages," he says.

And Haynes was the only black person in the department. "Some of my colleagues were undoubtedly curious about me. That is human nature," he smiles. The young engineer quickly proved himself, and race was never an issue.

Haynes worked for Kennecott for six years be-

fore he felt it was time to take another road. "I decided to go to medical school because I became disenchanted with corporate life, primarily the periodic mass layoffs involving engineers. The lack of true independence that consulting engineers showed bothered me as well," he says. "I needed something that depended on demand as well as my abilities, and medicine was that way."

After earning a medical degree from the University of Utah in 1979 and completing additional training, Haynes was recruited to Cheyenne to start a urology practice. He loved helping

Haynes says he has tried to live by the content of his character throughout his life, whether it was working on his parents' farm in the South, solving a complex engineering problem, performing surgery on a sick patient, making decisions in board meetings, or raising cattle on his small ranch near Cheyenne.

patients and fellow medical professionals, but he also quickly realized he missed working outdoors – just like he did, ironically, as a boy laboring on that Louisiana farm he nearly grew to hate.

“One day the little red light came on, and I started thinking I could live on a small ranch while still practicing medicine. The next thing you know I am running cows and building fence,” Haynes notes.

He and his wife purchased a ranch west of Cheyenne, and for the next 14 years he practiced urology and punched cattle until retiring from medicine in 1998. “My late wife became ill so I took time off to be with her and to concentrate on the ranch,” he explains in an emotional, soft voice.

Though he remains officially retired, Haynes states proudly, “I still feel I have a responsibility as a physician because the government – society – spends a lot of money training doctors. My phone still rings from previous patients, and I try to give them advice about doctor so and so. I still help the VA hospital in Cheyenne whenever they call.”

“Do I have that same responsibility to society as a rancher?” Haynes asks himself in front of the rapt audience. “Yes!” he boldly responds. “I believe I must leave the land and water in better shape than when I bought the place. I have a responsibility to consumers to give them a healthy, nutritious, all-natural product,” stresses Haynes, who raises grass-fed Herefords, Black Angus crosses, and Salers.

“Ranching is not as glamorous as being a physician, but I’ve always considered myself a cowboy, even when I was following two mules back on the farm in Louisiana. Ranching offers a variety of challenges such as when you’re deciding how much hay the cattle need based on animal age, stage of gestation, air temperature, and other parameters. You’re basically an animal husband,” he says.

“You’re also a range manager and an economist. When studying commodity markets, one quickly learns the dynamic nature of supply, demand, market psychology, and other interesting and necessary principles of economics.

“I also love the physical nature of the work, and then there’s the environment, which is so beautiful here on the High Plains,” continues Haynes, perhaps reflecting on his work earlier in the day, a time when it felt right to don a weathered cowboy hat, a rugged denim shirt, worn brown leather chaps, and western boots sporting something he swore he never wanted to see again – mud.

“We are blessed with springs, creeks, and a diverse wildlife population including deer, antelope, elk, mountain lions, hawks, owls, and an occasional eagle. There are a variety of songbirds and waterfowl, beaver, and coyotes, which are great for small rodent control. We even have a few badgers, but it is hard to consider them a *blessing*,” Haynes chuckles.

The ranch work must have followed Haynes into the College of Agriculture conference room. For several moments well into his presentation, he mentions nothing about race as he and the “Rooted in Diversity” students seem to be on an imaginary horseback ride

across the short-grass prairie, trailing cows into a late winter, pastel-colored Wyoming sunset.

The imaginary journey must have taken him back to his roots, agricultural roots that date back four generations. He again touches on the importance of a person’s character, not color, and how far the country has come in terms of civil rights. His speech is appropriately titled “From Lincoln to Bush, Living Martin Luther King’s Dream.”

Underscoring his belief in looking at things positively, Haynes asserts, “We don’t live in an Iraq or a Beirut or a Middle East, but we could. We’ve had some very strong political and racial differences in this country without anarchy taking over. Look at how long the Civil War lasted, and compare that to how long the Jews were persecuted or how long they have been fighting in the Middle East.”

He adds, “The South is much improved. The country is much improved. We’ve come a long ways, and that’s what we need to focus on.”



Wyoming has good potential

By Robert Waggener,
Editor

Office of Communications
and Technology

Wyoming isn't a hot bed for potato production, but a University of Wyoming professor says he believes farmers in the state could benefit financially by growing spuds for seed.

Department of Plant Sciences Professor Gary Franc says seed potato production could also help agricultural producers diversify their operations.

"We're low on the totem pole in terms of potato production. Wyoming is like the hole in the donut as Idaho, Colorado, Nebraska, and Montana are all big producers," he notes.

But Franc says that isolation could open a new industry for the Cowboy State.

"Because of our isolation and lack of widespread commercial production, we have great potential for seed potato production," Franc says. "Potatoes are vegetatively propagated, and because every generation is essentially cloned along with whatever pathogens happen

to be present, they have a greater potential for disease loss."

Franc, who has conducted potato research since the late 1970s, says that in the past couple of years he has received a number of calls from large potato growers in the region inquiring about the potential for growing seed potatoes in Wyoming.

"Some of the growers are so big they want to set up their own satellite farms for seed production," he says, "and they could make their own arrangements for seed certification."

Franc knows of only several potato growing operations in the state but believes that number could grow.

Don "Bud" Brown, whose family has raised potatoes and other crops in the Pine Bluffs area for 90 years, agrees.

"There are a lot of potatoes concentrated in certain areas of the region, and so there is more potential for disease. If you have commercial growers all around you and you are trying to grow certified seed, your potatoes have much more potential for contracting any of the various diseases," he says.

However, Brown emphasizes, the demands for spuds must first increase on a national level before he believes Wyoming could become a viable seed-production state.

"The demand for potatoes went down over the past couple of years because of things like the Atkins low-carb diet. We're hoping that a lot of advertising the potato growers are doing will help turn this around," he says. "Most people do or should know that potatoes are one of the healthiest foods for you."

In addition to seed potatoes, Brown grows wheat, small grains, alfalfa, corn, and dry beans.



Department of Plant Sciences Professor Gary Franc, right, and Syngenta product development specialists John Koenig, left, and Pete Forster, back, evaluate the timing of different fungicide applications for effective early blight suppression. The studies were taking place in a potato field containing research plots at the Torrington Research and Extension Center.

to grow potatoes for seed

“Potatoes are our most expensive cash crop. I put more money into 200 acres of potatoes than all of the other farming together,” says Brown, whose seed potatoes are certified by the Potato Certification Association of Nebraska. “I spend \$10 an acre for top-quality wheat seed. For potatoes, you might spend \$400 an acre in seed, which I did last year.”

The costs for weed and insect control, harvesting, and storage of potatoes are also greater than the other crops grown on the Brown farm.

“We harvested our seed potatoes in mid-October last year, and they are waiting to be sold for the 2005 plantings. That means I have to furnish all of my own storage, and I’ll probably spend \$1,000 a month just on electricity to maintain a controlled temperature. It’s a lot different than wheat, beans, corn, alfalfa, and many of the other crops that you normally take to the silo. I am sitting here with a whole potato crop wondering what will happen,” he said shortly after last fall’s harvest.



Professor Gary Franc

“You have a very high investment in the crop, and when prices go to heck you stand to lose a lot of money. And there are always environmental factors; we’ve had hail storms and freezes that totally wiped our potato crop out,” he continues. “It can be an expensive gamble, and that’s why many farmers go with the more secure crops.”

In good years, though, growing seed potatoes can be a very lucrative business, and that’s why Brown and his family have continued planting them. And that’s why he also stays on top of the latest science, including the research being performed by Franc and his colleagues.

“Gary has been very helpful down here. He’s

talked about diseases at some of the major meetings we’ve had, and they’ve had some potato plots at the university extension farm there in Torrington,” Brown says.

When it comes to plant pathology, Franc notes, the higher the value of the crop, such as seed potatoes, the higher funding base it receives for research including control measures such as fungicides.

“Potatoes are a \$4 1/2 billion-plus industry in the United States, and we’re trying to give farmers better tools for better economic returns,” he says.

The most visible research that he and other scientists are working on in-

“Because of our isolation and lack of widespread commercial production, we have great potential for seed potato production.”

— Gary Franc

volves field testing as well as modeling, or predicting when diseases might strike.

“We spend a lot of our time looking for fungicides that are safer to use and require lower application rates. This is better for the farmers, the consumers, and the environment,” Franc emphasizes.

Early blight, which is caused by the fungus *Alternaria solani*, primarily affects leaves and stems. The disease can result in considerable defoliation, and it can enhance the chance for tuber infection under favorable weather conditions and if left uncontrolled. Premature defoliation may lead to considerable reduction in tuber yield and quality.

“Trying to control early blight is like trying to control a fire. If you put fungicides on too early, it’s like putting a five-gallon bucket of water on a house before a spark ever hits, and you’ve wasted your efforts. Once a fire starts, if you wait to see how bad it’s going to get it’s usually too late to control it,” Franc analogizes.

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“If you put fungicides on plants too early, it’s wasted. But waiting until after disease has started is bad. The best time to put fungicide on is when the disease is just getting started,” he says. “Through modeling, we’re trying to come up with the best time to utilize disease-suppression methods.”

Franc says Web-based early blight prediction models are now being tested. This involves placing weather stations in various locations around a region, and those stations in turn feed information into a central data base.

“We’re trying to fine tune our disease-prediction models, primarily with early blight and secondarily with late blight. Year in and year out early blight is the disease that causes the most loss,” says Franc, who notes that colleague Bill Stump, a research scientist in the plant sciences department, has been an integral contributor to the research.

“You need a host, a pathogen, and the right environmental conditions to interact to give you a disease outbreak,” Franc continues.



*Research Scientist
William Stump*

“Farmers can log on to get specific information about their area. As of now, you will have to subscribe to the service, but I hope this research leads to the development and acceptance of information sources the public can use.”

Despite this technology, he emphasizes, the best first line of defense is incorporating sound cultural practices including crop rotations, fertilizing, and proper irrigation.

“A happy plant is a plant that’s more resistant to attacks,” he says.

On the Web: http://www.nationalpotatocouncil.org/NPCresources_seedagen.cfm?cache=210502021454

Spud research

By Robert Waggener, Editor
Office of Communications and
Technology

It looks like a scene from the Arctic, not a place where potato and other plant-related studies are underway by experts such as Department of Plant Sciences Professor Gary Franc and Research Scientist William Stump.

Heavy snowfall, strong winds, and bitter-cold temperatures embrace the appropriately named Storm Peak Laboratory (SPL), a permanent mountain-top facility on 10,531-foot Mount Werner near Steamboat



Professor Gary Franc removes screens from a “cloud collector” that he designed to determine if plant pathogens such as the bacterium that causes blackleg and bacterial soft rot in potatoes are carried in the atmosphere. The collector is on the top of Storm Peak Laboratory on Mount Werner near Steamboat Springs, Colorado.

not confined to fields and laboratories

Springs, Colo.

Wearing near expedition-style clothing, Franc and Stump battle the wind and the snow as they venture to the roof of SPL to collect cloud water and snow, directly out of the clouds. These samples will allow them to study the transport of bacteria in the atmosphere – naturally occurring bacteria that could be carried in the clouds from bodies of water such as the Pacific Ocean or bacteria that could intentionally be placed in the atmosphere by terrorists.

This is just one of the many projects taking place at SPL, where scientists are researching everything from aerosol particles to gas scavenging.

“I’m looking for a needle in a haystack,” says Franc, looking at a photograph showing him setting screens at right angles to the wind. These screens are used to collect microscopic droplets of water.

So just what kind of needle is the professor trying to find in that frozen haystack? Bacteria including one that infects plants called *Erwinia carotovora*.

E. carotovora causes blackleg and bacterial soft rot in potatoes. Tubers from a blackleg infected plant can develop soft rot, which renders tubers inedible. These same bacteria also infect a wide range of other vegetable crops.

Studies by Franc and Stump at the Mount Werner SPL are offshoots of their traditional potato research in



Research Scientist William Stump uses an aerosol sampler to quantify airborne bacteria within storm clouds at Storm Peak Laboratory near Steamboat Springs, Colorado.

the field and laboratory.

“The research has been interesting. It’s a beautiful location, but it’s tough when you have to go up on that roof in the middle of the night to collect samples,” says Stump, who notes that they use a “laser pointer” to determine if clouds are present when it’s dark.

Franc designed the “cloud collector” at SPL in part with funds awarded by the Agricultural Experiment Station’s Competitive Grants Program.

“The collector provides a disinfested surface upon which the microscopic droplets of water that comprise a cloud can freeze,” Franc says. “The accumulated ice is harvested and assayed to determine the bacterial diversity present including the detection of plant pathogens mov-

ing long distances in the atmosphere.”

E. carotovora has been found in snow in remote areas of the Rocky Mountains, and Franc says they are learning as much as they can about the atmosphere so they can determine if these bacteria are being carried in storm clouds before falling to the ground – and onto farmers’ potato fields – in droplets of rain or particles of ice and snow.

“Call it CSI potato forensics,” Franc suggests.

There is a nice side benefit to the work.

“It’s not everyday that you can combine research with skiing,” Stump says with a smile.

On the Web: <http://stormpeak.dri.edu/>

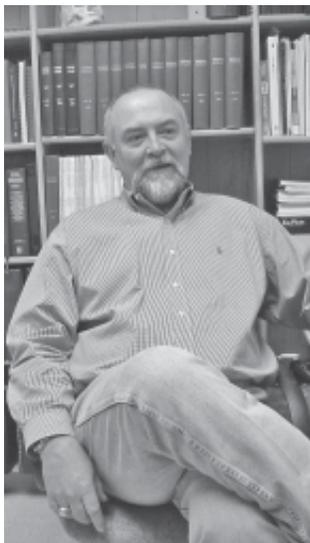
Scientists hope to identify plant toxin

By Robert Waggener,
Editor

Office of Communications
and Technology

Scientists in the Department of Veterinary Sciences have launched a study to identify the toxin or toxins in lichens responsible for last year's deaths of approximately 450 elk in south-central Wyoming.

The five-member team received a grant from the Wyoming Agricultural Experiment Station to research the lichen *Xanthoparmelia chlorochroa* and to hopefully determine which com-



Department of Veterinary Sciences Associate Professor Don Montgomery is one of the co-investigators studying the Red Rim elk die-off.

pounds in the plant led to the elk die-off in sagebrush habitat approximately 15 miles southwest of Rawlins.

The potentially deadly compounds must first be identified in the lichen before future work on the environmental, biomedical, and food-safety aspects of the problem in both ruminants and humans can take place, says the lead investigator, Professor Merl Raisbeck of the veterinary sciences department.

"Without the identity of the toxin, there is no practical way to evaluate the toxicity of *X. chlorochroa* under various environmental conditions to see if temperature, moisture, or ultraviolet radiation influences its toxicity," Raisbeck says.

Co-investigators are Assistant Professor Todd Cornish, Associate Professor Don Montgomery, and graduate student Becky Dailey of the veterinary sciences department, and Assistant State Veterinarian Walter Cook.

Veterinary sciences Professor Beth Williams was also a member of the team, but she and her husband, former Wyoming Game and Fish Department (G&F)



Assistant State Veterinarian Walter Cook, a University of Wyoming graduate who worked as a wildlife veterinarian with the Wyoming Game and Fish Department when partially paralyzed elk were discovered last year in the Red Rim area of south-central Wyoming, examines one of the stricken animals.

wildlife veterinarian Tom Thorne, died in a motor-vehicle crash in late December.

Raisbeck says that a book published in the 1960s alerted the researchers to the lichen.

"The text is John Kingsbury's *Poisonous Plants of the United States and Canada*. He cites an experiment station publication from the early 1950s by O.E. Beath, which alludes to Cooperative Extension Service and Agricultural Experiment Station documents published in the early 1930s," Raisbeck says.

He adds that the 1930s document describes field-work done "previously," presumably in the late 1920s.

"None describe any experimental work nor give sufficient detail to reproduce or even evaluate the accuracy of the reports. The lichen is misidentified as *Parmelia moluscula*, but the pictures look like our *X. chlorochroa*," Raisbeck emphasizes.

Turning to the present project, he says, team members will test *X. chlorochroa*'s effects on sheep because they are smaller than cattle and more research can be

responsible for Red Rim elk die-off

conducted in a limited space. Studies will be carried out for approximately two years at the Wyoming State Veterinary Laboratory and the University of Wyoming's Livestock Center west of Laramie.

The project stems back to February 2004, when hunters searching for coyotes in an area known as the Red Rim discovered two cow elk that were unable to get up on their legs. During the next six weeks, according to the Wyoming G&F, an estimated 450 elk similarly lost their leg strength and coordination and subsequently died or required euthanasia.

Extensive testing for metals, toxins, and environmental poisons proved negative, according to the project abstract prepared by the veterinary science researchers.

"Eventually, we were able to identify the causative agent as the lichen *X. chlorochroa*. As is often the case, one answer created many more questions. Within 24 hours of the release of our findings, wildlife managers and ranchers were demanding answers to the questions that we hadn't

yet considered," the researchers state in their abstract.

The UW scientists were being questioned about the safety of eating game animals that have consumed the lichen and whether it's safe to run cattle and sheep in lichen-infested areas. They were asked how a common plant that is often cited as excellent wildlife forage could poison such a high number of elk. And some wondered if there was any way of predicting the likelihood of a similar poisoning in the future.

These are legitimate concerns because the lichen

inhabits many areas throughout southern Wyoming, Raisbeck says.

But, he notes, without the identity of the toxin and its metabolites, there is no way to diagnose poisoning in smaller, less dramatic episodes, and thus gauge the extent of the problem across the region.

An answer also represents essential preliminary data for future research funding requests to other organizations because the lichen is widely marketed as a nutraceutical, the abstract states.

"As such, it is completely unregulated by the



*Scientists in the Department of Veterinary Sciences hope to identify the potentially deadly toxin or toxins in the lichen *Xanthoparmelia chlorochroa*. (Photo courtesy Wyoming G&F)*

usual food- and drug-safety agencies, yet evidence is piling up that lichen products have already resulted in numerous human deaths, and the National Institutes of Health is showing interest in the health effects of so-called 'health foods,'" it states.

The abstract notes that one possible toxin contained in *X. chlorochroa* is the lichen substance usnic acid.

"There is indirect evidence which both supports and refutes the hypothesis that usnic acid can cause a syndrome similar to what was seen on the Red Rim, but it has never been tested in ruminants. For practical reasons however, it is the easiest hypothesis to test."

On the Web: http://gf.state.wy.us/services/news/pressreleases/04/03/23/040323_1.asp



Department of Veterinary Sciences graduate student Becky Dailey and her adviser, Professor Merl Raisbeck, hope to identify the toxin or toxins in lichens responsible for last year's deaths of approximately 450 elk in south-central Wyoming.

Ag college research could address

By Robert Waggener,
Editor

Office of Communications
and Technology

What's all this yackety-yak about yak meat?

People who have tried yak say it tastes similar to beef but has a slightly more delicate, sweeter flavor, and they insist it has reduced fat.

Producers claim yak meat is low in cholesterol and high in protein while having fewer calories than beef, bison, elk, and even skinless chicken breast. But it's only a claim, not a fact.

Ron and Lynne Pulley, who are raising yaks on their small farm near Huntley, Wyoming, hope two University of Wyoming College of Agriculture scientists can determine exactly how meat from the exotic-looking animals compares to beef raised both in the feedlot and on the range.

"Yak is very, very lean, and though breeders talk about how nutritious the meat is, no one has done extensive research on the qualities of yak meat," Mrs. Pulley says.

If the Pulleys are successful in their federal grant request, Professor Dan Rule and Associate Professor



Animal science Associate Professor Warrie Means utilizes a special device to measure meat tenderness in a piece of beef prime rib. Similar technology will be used to study yak meat if grant funds are secured.



Department of Animal Science Professor Dan Rule uses a gas chromatograph to analyze fatty acids and cholesterol in meat. This device will be utilized in a study of yak meat if a Huntley, Wyoming, couple are successful in securing grant funds.

Warrie Means of the Department of Animal Science will lead a research project to analyze the meat of yaks and yaks that are crossbred with beef cattle.

Rule says their analysis in part will determine the chemical composition such as protein, cholesterol, total fat, and fatty acids (including the good omega-3 and conjugated linoleic acid fats), as well as meat tenderness.

"We continue to do research in beef cattle that are raised not only for feedlots but also grass-fed beef, and we've done work with bison meat," Rule says.

"It would be very interesting to determine how meat from yaks and yak-beef crosses would compare to some of the other more common species. Without speculating too much, yak may be similar to grass-fed beef in leanness and the type of fatty acids, but we won't know until research is done," he emphasizes.

Unless other funding sources surface, that research hinges on an \$80,000 grant application the Pulleys have submitted to the U.S. Department of Agriculture's Rural Development program. The couple expect to

yackety-yak about yak meat

hear in April if their application was successful, and if so a large share of the money will pay for the UW research while remaining funds will be used to purchase meat and materials.

The Pulleys already cleared their first major hurdle – securing a \$5,000 grant last June from the Wyoming Small Business Innovation Research and Small Business Technology Transfer (SBIR/STTR) programs. The title of their grant application was “Providing an important niche market: analysis of yak meat to validate nutritional benefits for gourmet and special diets.”

The grant program is funded in part by the Wyoming Business Council and is administered through UW. Any small business or individual in the state planning to submit a “phase one” application to any of the 11 participating federal agencies is eligible to apply for a “phase zero” state grant. The phase zero program in part is to facilitate high quality SBIR/STTR proposals.

“We’ve been very impressed with the Wyoming grant program, which is designed to help get people started in a business. It’s also

promoting the state and the university,” Pulley says.

The grant allowed them to hire a mentor to help prepare and submit a 25-page grant proposal to the USDA.

Mrs. Pulley says cattle producers shouldn’t feel threatened by the research. In fact, she says, it could help them diversify their operations.

“We are currently crossing two purebred yak bulls to Highland and Highland-Black Angus cross beef cows. The advantage of the crossbreed is that you have more genetic vigor,” she says.

Breeding yak bulls to beef cows has not posed any problems, she notes, adding that the only real investment required of a cattle rancher wishing to start a cross-breeding program is the purchase of a yak bull, which can cost approximately \$2,000. No special fencing or pens are required.

“We haven’t noticed any problems with our breeding program. Yaks are docile, easy to manage, and generally disease resistant,” says Pulley, who notes they raised 16 yak-cross calves last year.



These calves are a yak bull-Highland beef cow cross, and they are being raised for their lean, tasty meat.

Smaller birth rates lead to easy calving, but because of the hybrid vigor yak-cross calves grow quickly, and their weaning weights are similar to beef calves.

“Yak is basically a pasture-raised animal so you are looking at a natural product. It tastes good. I would describe it as being a little sweeter than conventional beef. Because it’s so lean, we’re targeting consumers having restricted red meat diets. Yak could be an alternative for them if the UW study is funded and goes as we hope,” she says.

Noting that the producers she is familiar with

are selling a few carcasses in niche markets, Pulley says, “I think there are some good local markets in this region.”

If they receive the phase one USDA grant and if the subsequent UW research shows that yak meat has nutritional advantages, Pulley says, this would allow them to apply for a phase two grant to build a marketing program.

“The envisioned goal of this proposal is to provide a nutritional, physician-approved red meat alternative to consumers,” she says.

On the Web: <http://www.uwyo.edu/sbir/phase0winners.html>

Exoticness and potential income encourage couple to breed yaks



These yak bulls owned by Ron and Lynne Pulley of Huntley, Wyoming, are being bred to beef cows.

**By Robert Waggener,
Editor**
Office of Communications
and Technology

Why would someone want to raise yaks and attempt to market the meat when cattle, pigs, and sheep are already proven commodities in the United States?

Lynne Pulley of Huntley, Wyoming, can't

speak for other yak producers, but the early retiree says she thought cross-breeding yaks with beef cattle would be an interesting hobby that would supplement her family's income by providing a nutritious, tasty, alternative meat to a few people in the region.

"I've always liked something a little different, and I always thought

yaks were interesting creatures," she says.

Before moving to Huntley in 1998, Pulley and her husband, Ron, raised Highland cattle on their small acreage near Cheyenne. At the National Western Stock Show one year in Denver, they saw their first yaks in person and were immediately intrigued.

They visited with one of the breeders, Jerry McRoberts of McRoberts Game Farm, located near Gurley, Nebraska, and learned that they could cross-breed yak bulls with their Highland and Highland-Black Angus cows.

"Jerry probably has the most experience with yaks in the United States, and he has one of the largest herds. He has worked on marketing yak meat and is making progress," Mrs. Pulley says. "We decided to give it a try so we got two yak bulls from him. They have been fun

and quite easy to work with."

Yaks come from the Tibetan Plateau of the Himalayan Mountains, where they live at elevations ranging from 10,000 to 15,000 feet. They were first domesticated approximately 5,000 years ago and were imported to the United States and Canada in the early 1900s.

"Some people say there are more than 2,000 breeding yaks in the U.S., but I don't think anyone really knows how many there are; a lot of people have a few of them, maybe a bull and several cows," Pulley says.

Bulls weigh between 1,000 and 1,500 pounds while females range from 600 to 800 pounds.

"They are quiet animals. They make kind of a grunting noise. Some people call them the 'humming cattle,'" she smiles.

On the Web: <http://www.mcrobertsgamefarm.com/>



Ron and Lynne Pulley are raising yaks on their small farm near Huntley, Wyoming. They hope two University of Wyoming College of Agriculture scientists can determine exactly how meat from the exotic-looking animals compares to beef raised both in the feedlot and on the range.

Study aims to find new vaccine to help control brucellosis

By Robert Waggener,
Editor

Office of Communications
and Technology

College of Agriculture researchers and a Wyoming Game and Fish Department wildlife disease specialist hope to find a new vaccine that could be used to help control brucellosis in cattle, elk, and bison.

Although a vaccine exists to immunize against brucellosis, inconsistent immunogenicity, efficacy, and safety across susceptible host species suggest the need for an improved



Wyoming Game and Fish Department Wildlife Disease Specialist William "Hank" Edwards, who is stationed on the University of Wyoming campus, tests elk blood for exposure to brucellosis.

vaccine candidate, according to the three investigators who plan to carry out their research in a College of Agriculture laboratory for at least three years.

The researchers will use In Vivo-Induced Antigen Technology (IVIAT) in their attempt to identify novel *Brucella abortus* in vivo-induced genes, says the principal investigator, Assistant Professor Gerry Andrews with the Department of Veterinary Sciences.

B. abortus is the causative bacterial agent of fetal abortion in domestic livestock as well as elk and bison. It is a pathogen prevalent in Wyoming and consequently has become a major agricultural concern with the state.

The other team leaders are Assistant Professor Larry Goodridge of the Department of Animal Science and William "Hank" Edwards, a Game and Fish wildlife disease specialist stationed on the UW campus.

"This research offers an innovative and unique approach to vaccine development. The need for an effective vaccine is of the utmost importance if we are to solve the brucellosis



Assistant Professor
Gerry Andrews

problem in northwestern Wyoming," Edwards says.

The project is one of four in the College of Agriculture that received funding this fiscal year from the Wyoming Agricultural Experiment Station's Competitive Grants Program.

In their abstract, the researchers state that while several gene products associated with *Brucella* virulence have been described, the majority have been identified with in vitro-grown bacteria.

"Thus, host factors which up-regulate some virulence loci in vivo may not be present in laboratory-grown cultures," they say.

In their decision to apply IVIAT technology, they say it is likely to represent a low-risk approach with potential "multiple high payoffs" to the identi-

fication, characterization, and comparative analysis of host-unique, in vivo-expressed virulence genes.

"IVIAT 'profiling' may potentially lead to more applicable bacterial targets for vaccine candidates and/or diagnostics for brucellosis," they state. IVIAT provides a simple, fast, and sensitive method for identifying novel and potentially important new targets for use in the diagnosis and prevention of infectious diseases.

Team members state in their abstract that the potential of selected *Brucella* proteins for use as new vaccine candidates will first be evaluated in laboratory mice. If that research proves successful, testing could then take place in large ruminants.

On the Web: <http://webdevfp.uwyo.edu/vetsci/Faculty.asp>



Assistant Professor
Larry Goodridge

Forage-grass research helping north

By Robert Waggener,
Editor

Office of Communications
and Technology

It was like the drought devil had planted his evil eyes on Extension Educator Bill Taylor and a group of forage experts as they seeded two research plots in Weston County with some 30 grass cultivars in the spring of 1999.

As if the drought devil was tantalizing the research team, rain fell on each site the day following planting, and things were looking good as stands of cool- and warm-season grasses began to establish.

Then the countryside went dry.

A number of the varieties actually died out as the drought continued through 2004, when the bulk of the research was scheduled to wrap up. The team assumed much of their hard work would be to no avail, and that the study to determine which forage-grasses would do best for the dryland livestock operations would have to start all over.

But there was an upside to the drought. The study

showed that a number of varieties, especially several cool-season cultivars that generally do best in the cooler, wetter spring and fall months, can actually stand up to some pretty harsh conditions including extremely dry weather.

“There are already some seed companies in the region that are using this information for their recommendations. That tells me



College of Agriculture employees teamed with the federal Natural Resources Conservation Service to conduct forage-grass studies on two ranches in Weston County. NRCS employees Brendan Brazee, a range conservationist, and Tim Nordquist, a forage agronomist, seed the Geier site.

the research produced valuable information that is relevant and that is filling a need,” says Taylor, a University of Wyoming Cooperative Extension Service (UW CES) educator based in Weston County.

“One seed company representative told me that it was the most useful study he had seen on grass variety characteristics in our region,” Taylor adds.

“The best producers overall for the conditions we encountered were the wheatgrasses, particularly the intermediate and pubescent varieties, the bromes, and the wildryes,” he notes. “The fescues did not do well. In fact, they died out. The orchardgrass didn’t do well, and that was to be expected because of the dry conditions.”

The research is taking place on the Marlin and Mary Geier ranch 13 miles northeast of Osage near the Wyoming-South Dakota border and on Doug and Sharon Materi’s ranch seven miles southwest of Upton.

“We’re interested in finding better grass varieties for our dryland hay up in this dry country, and the

results show that we can use a number of varieties for haying and grazing,” Mr. Geier says with optimism. “I am willing to continue to cooperate with this research, and I hope it can help some of the neighbors.”

Mr. Materi agrees, saying, “If they want to do a study like this again up here, I would more than welcome them. The studies taught me a lot about what to plant and even more about what not to plant. I will gladly show people the plots if they want to stop by.”

Discussions about such a study got underway in 1998, when Taylor, who serves on the advisory committee for UW’s Sheridan Research and Extension Center, suggested that the center conduct studies in the Black Hills area similar to what had been done at the Sheridan site for many years.

“It always concerned me that all of the variety trials and research for northeastern Wyoming were being done primarily around Sheridan, which in some cases could have significantly different results compared to the Black Hills and

east Wyoming ranchers



The Doug and Sharon Materi ranch near Upton is one of two sites in Weston County where a forage-grass study is being conducted.

other areas in this part of the state,” Taylor says.

“Producers in our area thought the Sheridan R&E Center was conducting very valuable research, but some of them didn’t have strong confidence that the results from Sheridan would be the same for this area,” he adds.

Taylor took his concerns to then Sheridan R&E Center Director Roger Hybner, who indicated a study to compare cool- and warm-season grass varieties in Weston County would be appropriate. Plant experts with the federal Natural Resources Conservation Service (NRCS) gladly agreed to help since findings could help hundreds of livestock producers in northeastern

Wyoming and western South Dakota.

“The Materis and Geiers donated their time and expenses to prepare sites on their land for plantings, and the NRCS was an active participant and still is in determining the plant species, helping to do the plantings, and harvesting the samples,” Taylor says.

“In general, we completed five years of production sampling on both sets of plots and four years of nutritional analysis. Over the next five years we’ll continue to check stand densities,” he adds.

“The wildryes established and produced well that first year and were still producing at the end of our sampling. They were also

the highest producers in terms of protein content over the years of analysis at both places. The brome grasses, as was to be expected, had the lowest protein content in general, but there were some variations in terms of specific species,” Taylor says.

The extension educator notes that he wouldn’t feel comfortable making a general statement about what kind of grass species or particular cultivar would work best for ranches in Weston County and surrounding areas.

Instead, he emphasizes, “They are welcome to call me, and we can discuss what they intend to use the grass for, whether it’s for haying, grazing, or both, and what

season it will be utilized. It’s hard to give a blanket recommendation without talking to them about their individual purpose for a planting.”

The Geiers run about 700 Black Angus cows on 30,000 acres of deeded and leased land at the edge of the Black Hills.

The couple are developing 450 acres under a center-pivot irrigation system, but they will continue to rely on 500 acres of dryland pasture planted in an alfalfa-grass mix, and that’s where results of the UW study could come into play.

Looking over the production numbers and nutritional analysis, Mr. Geier says they are most interested in the cool-season wildryes for hay production.

“Two or three of the wildryes really caught our attention in terms of production, and we’re also looking at something that can stand up under the snow and give us some winter grazing. The yields look favorable, and two of the characteristics of wildrye are that they can stand up un-
(Continued on Page 20)



*Extension Educator
Bill Taylor*

(Continued from Page 19)

der snow and remain a little more palatable than the wheatgrasses when they ripen out,” Geier says. “The ryegrasses also get good early spring growth.”

Five wildrye cultivars were planted on the Geier ranch, and all but one produced decent to good stands even during the driest years.

When weather conditions are favorable, Geier says he plans to plant a mix of wildrye with alfalfa in a dryland pasture, and the selection of the mix will be based on the UW and NRCS research.

“An alfalfa-grass mix seems to work best during the drought years, and the results of the study will definitely help us,” he notes.

The Materis run 160 pairs of Black Angus cattle on approximately 2,000 acres of grass and sagebrush mix, and they dryland farm about 400 acres.

“About six years ago we put up 1,000 of the big round bales. Last year we only put up 45 because of the drought, and that was cutting everywhere we could. In the past couple of years, Mother Nature just hasn’t been very good to us,” Mr. Materi says.

Since weather plays such a huge role in their operation, he emphasizes, “I am agreeable to anything in order to increase production. When I plant my hay bottoms I mix grass with alfalfa, and from the studies I’ll be able to better decide which grasses perform well. That will likely be some of the wheat and rye grasses.”

For instance, Materi notes, “The Nordan crested wheat was a real good performer. It produced a good yield, and it matured about the same time as the alfalfa.”

Based on the research, he says, one field was planted in a mix of alfalfa and Nordan and Hycrest wheatgrasses in 2003.

“We hayed that field last year, and it was one of the few fields I cut because of the drought. I will use the results in my decision making in the future,” Materi says.

“Now, if you can only figure out a way to make it rain. Maybe we should do a study on that.”

On the Web: http://www.uwyo.edu/Agexpstn/Reports/Progress_Report_Sheridan02.pdf



NRCS Forage Agronomist Tim Nordquist places one variety of grass seed in a small hand seeder provided by the Sheridan Research and Extension Center before planting the next plot row.



Project

**By Robert Waggener,
Editor**

Office of Communications
and Technology

Four College of Agriculture researchers are teaming with two faculty members from Colorado State University to study how cattle production can be sustained during multiple years of drought.

“The objective of the research is to identify, evaluate, and communicate the environmental and economic consequences of drought management strategies utilized by a sample of Wyoming cattle producers,” says the principal investigator of the team, Department of Agricultural and Applied Economics Marketing Specialist Chris Bastian.

The research and subsequent education regarding optimal drought management strategies should improve the economic viability of agricultural operations and reduce the stresses that ranch families face during hard times, Bastian adds.

It should also lessen the

focuses on sustainable cattle production during droughts

potential damage to natural resources used in cow-calf production systems that could occur during consecutive years of drought.

Other co-principal investigators are Assistant Professor Siân Mooney with the agricultural and applied economics department; Beef Cattle Specialist Steve Paisley with the animal science department, and Range Management Specialist Michael Smith with the renewable resources department.

They will be joined by Marshall Frasier and Wendy Umberger, faculty members

with CSU's Department of Agricultural and Resource Economics in Fort Collins, Colorado.

The project is one of four that received funding from the Wyoming Agricultural Experiment Station's Competitive Grants Program for fiscal year 2005.

"We are already starting to get this project going with a survey that asks Wyoming cattle producers about their management practices," Mooney says.

Research is scheduled to take place through 2007.

In their abstract, the six-member team says that

much of the western United States has faced below-normal precipitation for the last three to four years, which has reduced range productivity, winter-feed production, and incomes.

As a consequence, they say, western cattle producers have liquidated 533,000 cows – approximately 8 percent of the region's beef cows – since 2001.

"Smaller cowherds and the potential for ranch business failure translate into increased rural family stress and reduced economic activity in local communities," they say.

Previous research suggests that grazing and stocking decisions during periods of drought can impact future forage resources. While strategies exist to reduce the impact of grazing on drought-stressed pastures, the economic consequences of those strategies are not well understood, the abstract states.

"Drought management strategies could become more important in the future because of the potential for climatic warming. Some researchers predict that our



Department of Agricultural and Applied Economics Marketing Specialist Chris Bastian and a team of researchers from the College of Agriculture and Colorado State University received a grant to study how cattle production can be sustained during consecutive years of drought.

weather will become more variable in the future," Mooney says.

The team will conduct a pilot study that develops methods for data collection and mathematical modeling techniques that can provide the basis for an expanded study for which they will apply for additional funds.

On the Web: <http://agecon.uwyo.edu/agecon/aboutus/facultystaff/bastian.htm>



Siân Mooney, an assistant professor in the Department of Agricultural and Applied Economics, says drought management strategies could become even more important in the future because of the potential for climatic warming.

final cutting PROGRAM NOTES



David "Tex" Taylor

Agricultural and Applied Economics

Professor **David "Tex" Taylor** will receive one of two College of Agriculture Outstanding Educator awards for 2005.

Taylor is a community development specialist with the Department of Agricultural and Applied Economics.

"Tex has built a national and regional reputation for excellence in extension-oriented research while directing his attention first and foremost to analyzing economic development issues in the state of Wyoming," says Department Head **Nicole Ballenger**, who nominated Taylor for the award.

Among those writing letters of support were **Jim Magagna**, executive vice president of the Wyoming Stock Growers Association, and Professor **Harold Bergman**, director of the Ruckelshaus Institute and the Haub School of Envi-

ronment and Natural Resources.

"The letter from Mr. Magagna sums up the source of Taylor's exceptional effectiveness as an extension educator," Ballenger says. "He writes that Tex is a textbook case of success in delivering applied research to agricultural producers and decision makers in a manner that can be easily understood and utilized."

Ballenger continues, "As Tex's department head, I can add that he does this without in any way sacrificing disciplinary standards in agricultural economics or scientific objectivity."

"The letter from Dr. Bergman tells us that Tex is an important and valued educator within the university community as well as to the citizens and public decision makers beyond the university doors," Ballenger notes.

In other department news, Ag Marketing Specialist **Chris Bastian** and Farm and Ranch Management Specialist **John Hewlett**, along with 12 faculty members from seven other universities in the West, received the Colorado Epsilon Sigma Phi Distinguished Team Award for their development of RightRisk. In

addition, they were awarded the Colorado State University Cooperative Extension Service Team Award as members of the regional RightRisk Team.

RightRisk is a relatively new program that helps agricultural producers understand and explore risk-management decisions.



Doug Hixon

Animal Science

The University of Wyoming Block and Bridle (B&B) Club and the Department of Animal Science administer an "academic quadrathlon" (AQ) competition each spring. Four-member student teams compete in oral and written competitions, a laboratory practicum, and a quiz bowl.

"For ease of administration, the lab practicum is conducted with Colorado State University (CSU) with the site rotating between the two universities annually," says animal science Department Head **Doug Hixon**.

"However, there is no competition between students from the two institutions in this local contest."

The high team in the UW contest consisted of **Corri Rekow** of Lakeview, Oregon, a junior Animal and Veterinary Science (ANVS) major in the meat science/food technology option; **Erin Smith** of Lusk, a junior in the ANVS production option; **Kelcey Christensen** of Wright, a senior in the ANVS business option; and, **Justin Tedford** of Fort Lupton, Colorado, a junior ANVS major in meat science/food technology.

Three teams each from UW and CSU were tested about their knowledge of animal husbandry, relevant issues in animal agriculture, and livestock-handling equipment.

Professor **Dan Rule** serves as faculty adviser to the AQ. Co-advisers of the B&B Club are Rule and **Keith Underwood**, a graduate student in the department and coach of the UW meat judging team.

In other news, the B&B Club once again sponsored its Club Calf Sale this school year as a fund-raising event and service activity. "This year they added a new dimension to the event as

they purchased two calves from the sale for near market price and donated them to the St. Joseph Children's Home (SJCH) in Torrington," Hixon says. "This is a state-supported facility that provides young people opportunities to learn and overcome some of life's challenges that have fallen in their paths. The residents learn the importance of taking responsibility and hard work just as any 4-H or FFA member would in caring for their livestock projects."

Hixon says that SJCH residents are allowed to participate in the Goshen County Fair at the culmination of the project. Each year, four to six beef steers and about the same number of lamb projects have been completed by the residents.



Mike Liebman

Family and Consumer Sciences

"Our department would like to share the exciting news about the selection of Professor **Mike Liebman** as Outstanding Educator for the College of Agriculture, one of only two so honored

for 2005," says Associate Professor and Department Head **Karen Williams**.

"Mike is an excellent classroom teacher, one who his students say has a direct teaching style, applicable course assignments, constructive suggestions for improvement, and high expectations that contribute to their success in graduate school and in the workplace," Williams says.

Liebman's colleagues note his ability to communicate complex concepts and research to lay audiences, make presentations at conferences, guide graduate students, and publish research that benefits multiple audiences.

In other news, the department has continued its efforts to improve student recruitment. Williams and Associate Professor **Rhoda Schantz** attended the University of Wyoming's Discovery Days on February 19.

"Our senior office associate, **Mona Gupton**, created a new poster for our display board that more accurately depicted our program options and paralleled the departmental Web page," Williams says.

Professor **Donna Brown** and Gupton created a new full-color brochure for the textiles and merchandising option, which was available for Discovery Days and very well received by parents and students.

"Current undergraduate

enrollment has seen a significant increase in all program areas. The next steps will include creating new brochures for the remaining program options, continuing to improve the Web page, and targeting specific out-of-state recruitment fairs to boost graduate student recruitment," Williams adds.

At Discovery Days, Williams and Schantz joined forces with College of Agriculture Recruitment Coordinator **Pepper Jo Six**.

"It has worked well for us to partner with Pepper Jo at the fair. She is knowledgeable about the many options available for students in the agriculture college," Gupton says. "The group of kids we visited with this year were very enthusiastic about coming to UW. They seemed to know a great deal about what they wanted to do in their futures."



David Fay

Molecular Biology

An interdepartmental Ph.D. program will strengthen graduate recruiting and education in the molecular and cellular life

sciences (MCLS), says Department of Molecular Biology Assistant Professor **David Fay**, who is spearheading the proposal.

Fay says the plan will provide the framework to better attract and educate top-quality doctorate students on an international level. Nearly 50 faculty members in 13 University of Wyoming departments and four colleges, including agriculture, have expressed a strong desire to participate in MCLS.

Graduate School Dean **Don Roth** says he anticipates the appropriate administrative units will review the program prospectus this semester.

In other news, the department has established a scholarship fund in memory of Assistant Professor **Theodor Hanekamp**, 43, who unexpectedly died last September but whose contributions to the department, university, and field are continuing.

"Theo was only at the beginning of his scientific and academic careers at the time of his untimely death. It seems fitting for the department to honor him by establishing a scholarship in his memory," says molecular biology Professor and Department Head **Jordanka Zlatanova**.

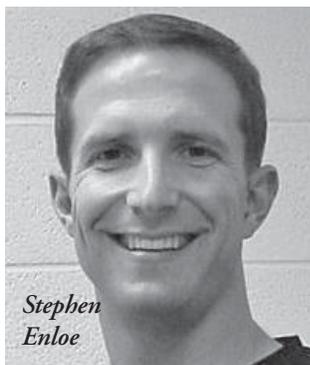
"Theo was a close associate of mine for many years, and no one has contributed more to the success

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of my own research program than he did,” adds Professor **Peter Thorsness**. “He uncovered some inconsistencies in nucleotide metabolism, an issue that others had long since considered settled. He realized the importance that those unexplored issues could have in disease, particularly with regards to cancer.”

Gifts should be made payable to the UW Foundation – Hanekamp memorial and mailed to: UW Foundation, 1200 Ivinson Ave., Laramie, WY 82070.

“Please indicate that your gift is for the Theo Hanekamp memorial scholarship,” says Anne Leonard, director of Ag Development and College Relations.



Plant Sciences

The 10th annual Weed Management Workshop for Professionals, sponsored by the University of Wyoming's Cooperative Extension Ser-

vice and several companies and organizations, was a success, according to one of the organizers, Assistant Professor and Extension Weed Specialist **Stephen Enloe**.

The workshop, held February 16 and 17 at the Casper Radisson, drew a packed house with more than 135 professional pesticide applicators registered and in attendance, Enloe says.

Helping him lead the conference, which was organized by the UW Conferences and Institutes, was Department of Plant Sciences Pesticide Coordinator **Mark Ferrell**.

“The primary focus of the workshop was to provide professional applicators with herbicide updates from the private industry including cutting edge information on new products, herbicide label changes, and weed research,” Enloe says.

“This was also an opportunity to preview some of the label changes before the 2005 Weed Management Handbook published jointly by Montana, Utah, and Wyoming comes out later this year,” he adds.

Graduate students **Andrew Kniss** of Bayard, Nebraska, and **Gustavo Sbatella**, of Martinez, Argentina, from

the UW Weed Science program presented talks on genetically modified crops in Wyoming and weed seed-bank dynamics in different cropping systems, Enloe notes.

“This workshop was originally developed by Extension Weed Specialist **Tom Whitson**, who recently retired from the College of Agriculture. Strong statewide support for continuation of the semiannual workshop was the key to this year's meeting,” Enloe says.

The next workshop is tentatively scheduled for February 2006.



Renewable Resources

The Range Science Education Council and the Society for Range Management (SRM) presented their 2005 Outstanding Undergraduate Teaching Award to Associate Professor **Dan Rodgers**.

Rodgers was honored with the national award February 9 at SRM's 58th annual convention in Fort Worth, Texas.

In a letter nominating Rodgers for the honor, then Department of Renewable Resources Head **Tom Thurow** said, “Dr. Rodgers encompasses all the good traits that a university professor should possess, and he is a positive force in the life of any student or professor that has the good fortune to interact with him.”

Rodgers has been a key component of range management education in the College of Agriculture since 1991. He also advises the University of Wyoming Range Club, UW Rodeo Club, UW Plant Team, and UW Undergraduate Range Management Exam Team.

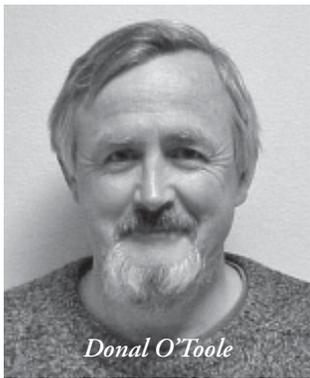
“One of my goals is to educate students in the science of range management and the responsibilities of being a manager of natural resources on rangelands,” Rodgers says.

Early in his career, Rodgers worked as an extension range management specialist in Texas and Wyoming.

“His dedication to serving students surfaced while in extension and continues

today as he mentors students of all ages at youth, range management, and natural resource camps, at our society's youth and student forums, in workshops sponsored by environmental groups, and each year with programs to teach our teachers within the public school system of Wyoming," said renewable resources Professor **Quentin Skinner** in a second letter nominating Rodgers.

Rodgers manages the Wyoming SRM scholarship program for the department. He is on the College of Agriculture Curriculum Committee and represents UW on the Range Science Education Council, which he has served as president.



Donal O'Toole

Veterinary Sciences

Approximately 30 representatives and senators from the Wyoming State Legislature, along with a number of their family members, visited the Department of Veterinary Sciences and the Wyoming State Veterinary Laboratory on February 5.

This was part of Legislators' Days at the University of Wyoming, which is held annually when the assembly is convened in Cheyenne, according to Department of Veterinary Sciences Head **Donal O'Toole**, who is also director of the veterinary laboratory.

"The purpose of the event is to inform legislators about selected programs at UW. A good fraction of the state's leadership toured the College of Agriculture facilities," O'Toole says. Among them were the president of the 58th legislature, Sen. **Grant Larson**, R-Teton/Fremont, and the speaker, Rep. **Randall Luthi**, R-Lincoln," O'Toole says.

After an overview of the state veterinary laboratory's statutory functions, the politicians received short show-and-tell presentations in selected diagnostic units.

Professor **Ken Mills** and Assistant Professor **Gerry Andrews** had fluorescent microscope preparations of positive cases of plague and rabies from recently diagnosed cases.

The rabies, plague, and tularemia unit recently purchased a new fluorescent microscope with funds from the office of UW Vice President of Administration **Beth Hardin**. "The equipment greatly enhances the veterinary department's ability to make a diagnosis of these

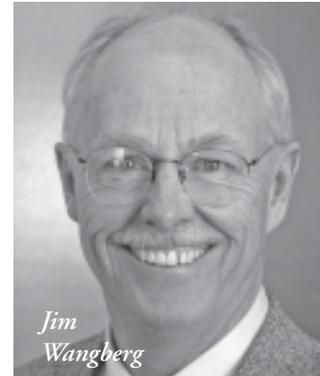
important diseases," O'Toole says.

Assistant Professor **Todd Cornish** and **William "Hank" Edwards**, a wildlife disease specialist with the Wyoming Game and Fish Department, displayed how West Nile virus infection is diagnosed in horses and birds. They also discussed the ongoing research that is taking place with brucellosis in elk, bison, and cattle.

Professor **Merl Raisbeck**, head of the toxicology unit, took the group through his laboratory's work on animal poisonings in Wyoming, including last year's die-off of elk in the Red Rim area of south-central Wyoming. Raisbeck and a team of scientists from the department are continuing their investigation to identify the toxin or toxins in lichens responsible for the deaths.

O'Toole led the legislators on a tour of the "meat-and-potatoes" end of the lab – the necropsy area where carcasses are examined and tissue samples are routed to individual laboratories.

Laboratory Technician II **Jackie Cavender** from the virology unit introduced the group to current tests that are offered to diagnose viral diseases in animals. "There was considerable interest in a bovine viral diarrhea ear-notch test that she recently helped validate," O'Toole says.



Academic and Student Programs

"Students, the reason we're here," reads a plaque in the office of College of Agriculture Associate Dean **Jim Wangberg**, who is also director of Academic and Student Programs.

That motto is the primary reason Wangberg accepted an invitation to chair a national task force to determine if a second academic summit of its kind should be held in Washington, D.C.

After Wangberg and fellow task force members from across the country voiced a resounding "yes," the group was then put in charge of developing themes for the second summit, which is scheduled February 27 to March 1, 2006, and is being organized by the National Academy of Sciences (NAS).

"The NAS is the premier scientific body in the United States and for the academy to take this on is absolutely huge," Wangberg says.

final cutting PROGRAM NOTES

“This summit is going to be asking the question: ‘How should we be preparing society-ready graduates for the future?’” he adds.

Wangberg and members of the Academic Committee on Organization and Policy, the national body that he currently chairs, came up with the following themes that will be explored during the summit:

- Developing faculty as agents of change in undergraduate and graduate education,
- Meeting the challenges of an evolving, diverse student population,
- Preparing students with critical knowledge and skills to be successful in multiple career settings.

Wangberg says the task force believed a second summit was in order because so much has changed in the agricultural, environmental, and life sciences since the 1991 gathering. That conference was the first of its kind to critically evaluate undergraduate programs, and it led to a major report titled *Agriculture and the Undergraduate*.

The “agriculture system” that at one time focused primarily on methods of farming and food pro-

cessing has been transformed into a “food system,” according to a summary of the summit that Wangberg helped develop.

It states that today’s food system is immersed in technological and social change, human, animal, and environmental health concerns, energy needs, homeland security issues, international trade, and global sustainability.



Warren Crawford

Cooperative Extension Service

University of Wyoming Cooperative Extension Service (CES) Educator **Gene Gade** has finished sabbatical while Educator **Tom Heald** begins his six-month leave May 1.

“It’s unusual for extension agents to take sabbaticals, and it’s very unusual for two educators to take them in the same year,” says College of Agriculture Associate Dean and CES Director **Glen Whipple**.

“I am delighted that Gene and Tom have each been selected for a sabbatical. It will give them an opportunity to step back, to learn, and to retool so as to better serve in the future. I believe each will be more effective servants of the people of their communities as a result of the experiences afforded by this opportunity,” Whipple adds.

Gade, an educator for the Northeast Extension Area covering Campbell, Crook, and Weston counties, was on leave through April 1 to continue his work with the Vore Buffalo Jump (VBJ) project near Sundance. His efforts to help raise funds for a museum near the site were the topic of a feature story in the fall 2004 edition of *Ag News*.

“While I focused my sabbatical on the VBJ project, I continued a degree of involvement with several other aspects of my work,” Gade says.

Heald, educator for the CNN Extension Area, which includes Converse, Natrona, and Niobrara counties, plans to travel throughout Wyoming making field notes and photographing native plants. “The result of this work will be to

compile fact sheets and hopefully a book that would help residents of the state to employ these plants into their landscapes,” Heald says.

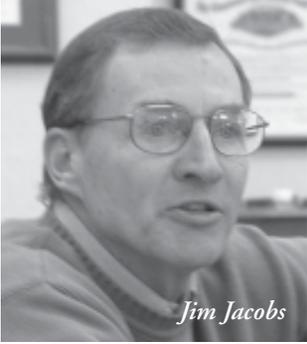
In other CES news, **Warren Crawford** has been hired as the new state 4-H youth development specialist, focusing on natural resource programs. Crawford, who will work out of the state 4-H office in the College of Agriculture, previously was an extension educator for Carbon County.

Milt Green, who served as an educator for the Fremont/Wind River Extension Area, has accepted a similar position in the CNN area. Green, who will be stationed in Casper, is also a member of the CES Enhancing Wyoming Communities and Households initiative team.

Agricultural Experiment Station

The College of Agriculture brought in a beefy 21 percent of the external dollars added to the coffers of the University of Wyoming’s Office of Research during the recent fiscal year, besting all other colleges on campus.

Faculty members in the college were responsible for



securing more than \$12.5 million of the \$61 million in sponsored project awards granted to UW from July 1, 2003, through June 30, 2004.

"We're one of the smaller colleges, yet our research dollars are tops," says Dean **Frank Galey**.

Wyoming Agricultural Experiment Station (AES) Director **Jim Jacobs** adds, "The external grants received by the College of Agriculture greatly enhance the ability to conduct research and education programs in the college and across the state."

Money from a variety of sources ranging from state and federal governmental agencies to science foundations and industries fund hundreds of projects in the seven academic departments of the agriculture college as well as in AES, the Cooperative Extension Service, the Office of Academic and Student Programs, and the dean's office.

Among the areas that AES oversees is a university-wide competitive grants program, and this year AES

awarded \$192,332 to four College of Agriculture research projects that are focusing on toxicity of lichen in elk and other ruminants, identifying a new vaccine that could be used to help control brucellosis, ways to increase the efficiency of beef cattle production, and how to sustain cattle production during years of drought.

"We received 14 applications for this fiscal year's AES Competitive Grants Program. They were very good applications, and the review committee had a very difficult time choosing the four," Jacobs says.



Ag Development and College Relations

The College of Agriculture recently lost two longtime faculty members. **Theo Hanekamp**, a member of the Department of Molecular Biology faculty, died unexpectedly in September. Professor **Beth Williams**, a key member of the veterinary sciences department,

together with her husband **Tom Thorne**, were killed in a motor-vehicle accident in December.

"These individuals touched many lives, and to honor their many contributions to research and education, the college has helped establish memorial funds for them," says **Anne Leonard**, director of Ag Development and College Relations.

Details regarding Hanekamp's career and his memorial scholarship fund can be found in the molecular biology department notes.

Concerning Williams and Thorne, Leonard says, "They were internationally recognized for their work in wildlife conservation and health. Beth had been a member of the veterinary sciences department at the University of Wyoming since 1983 while her husband was a 36-year veteran of the Wyoming Game and Fish Department."

Leonard adds, "Many alumni experienced firsthand the dynamic teaching style of Williams or were fortunate to have worked with her in the state veterinary laboratory. In the 1970s, she was the first to identify chronic wasting disease (CWD) in deer."

Department of Veterinary Sciences Head and Wyoming State Veterinary Laboratory Director **Donal**

O'Toole notes, "Doctors Williams and Thorne were nationally and internationally known for their work on wildlife diseases, particularly CWD and brucellosis, and for restoration of the endangered black-footed ferret and Wyoming toad. Training the next generation of wildlife disease specialists was a particular passion of theirs."

To honor their passion for teaching and research, the Department of Veterinary Sciences and the Thorne and Williams families have established a memorial fund for the couple. This fund will help provide scholarships for undergraduate, graduate, and veterinary science students, and it will support existing wildlife disease and conservation programs at UW.

Contributions can be sent to: University of Wyoming College of Agriculture Development Office, 1000 E. University Ave., Dept 3354, Laramie, WY 82071. Please make checks payable to the UW Foundation – Williams/Thorne Memorial Fund.

Persons wishing additional information can contact Leonard at (307) 766-3372 or by e-mailing aleonard@uwyo.edu.

Western grasshopper management project a hit in the East

By Robert Waggener, Editor

Office of Communications and Technology

A grasshopper control project developed by Alex Latchininsky, an assistant professor and extension entomologist in the Department of Renewable Resources, was featured as part of the Food and Agricultural Science and Education Exhibition in Washington, D.C.

The presentation was co-authored by Jeffrey Lockwood, professor of natural sciences and humanities, and Scott Schell, assistant extension entomologist, both from the renewable resources department.

It focused on the Reduced Agent and Area Treatments (RAATs) of rangeland grasshoppers, an integrated pest-management strategy developed by UW entomologists under Lockwood's leadership. Since 1997, the RAATs strategy has been successfully implemented in more than 10 western states saving ranchers millions of dollars.



Department of Renewable Resources Entomology Specialist Alex Latchininsky, left, met with U.S. Senator Craig Thomas, R-Wyoming, during an exhibition in Washington, D.C.

Among the people visiting the exhibition were U.S. Senator Craig Thomas, R-Wyoming, and staff members from the office of Congresswoman Barbara Cubin, R-Wyoming.

On the Web: <http://uwadmnweb.uwyo.edu/renewableresources/entomology/index.htm>

AG NEWS

Vol. 14, No. 1

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