UW COLLEGE OF AGRICULTURE

AG NEWS

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Dear Friends and Colleagues,

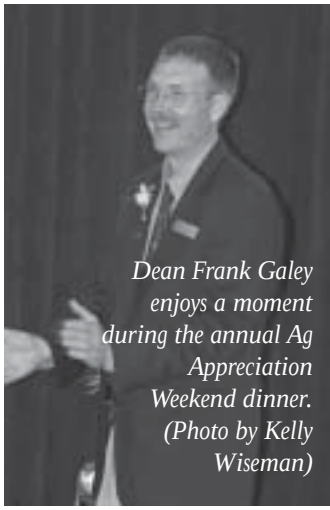
We hope this finds you all well and having a prosperous season. In Laramie, we had some badly needed moisture in the summer and early autumn. I understand that many of you have also received some desperately needed moisture, even in the bone-dry northeastern part of Wyoming.

Regardless of whether the state is near the end of this drought or still a long, painful journey away, we need to prepare for the next dry period now. I have mentioned elsewhere that conflicts over water will inevitably arise between an increasingly urban population and natural resource/agriculture needs.

"Realize what you really want. It stops you from chasing butterflies and puts you to work digging gold."

William Moulton Marston

We are doing our best here at the University of Wyoming to be sure that the tools our communities must have to tackle critical water issues are in place. The Department of Renewable Resources is focusing on water as an integral part of our rangeland ecology program. We have added Ginger Paige to our stellar faculty in the area of water resources. Ginger's assignment carries a large extension component. Thus, she will be working closely with our research programs and with you to help consider the questions that arise about one of our most precious resources. As Marston so aptly put it, we must figure out what we want for our water resource and get to work digging that "gold." It is my design that Ginger Paige and the rest of our team will be there to help all of us deal with water in this critical time.



Dean Frank Galey enjoys a moment during the annual Ag Appreciation Weekend dinner. (Photo by Kelly Wiseman)

On another front, your College of Agriculture is healthy and growing. Early indications are that we are at or above record student enrollment levels despite declining numbers of high school graduates coming from the state. We have also learned that despite our small size relative to other campus units, this college led the way in research funding for the past year. We hope this speaks to the confidence you have in our programs and directions.

In this issue, you will be reading about a few more of our programs and features. Professor Larry Held is highlighted in a "profile of courage" and dedication characteristic of so many people in the ag college. We also focus on efforts to reach out to constituents in different ways through a system to help dairy farmers in western Wyoming and video programming on good range and horticultural practices. Another activity includes work with wild bighorn sheep. You will find articles on the Y Cross Ranch and a UW student who is using wheat straw to create a wood substitute.

Thank you again for all of your support. Please stay in touch with your College of Agriculture. Have a great winter!

Frank

Dean Frank Galey
College of Agriculture

UNIVERSITY OF WYOMING

Milking them for all they're worth

by Vicki Hamende,
Senior Editor
Office of Communications and Technology

At one time there were more than 500 dairy farms in the scenic Star Valley of western Wyoming.

Today there are less than 30.

"They're a pretty independent bunch, too," says Hudson Hill.

He's the guy who is charged with tapping gently on barn doors to offer survival skills to dairy producers facing high costs and flat profits.

It isn't that he's not welcome; it's just that no one wants to be told what to do.

The University of Wyoming used to raise dairy cows and conduct research at a facility that still stands in Afton.

Hill can see it from the window of his office at the UW Cooperative Extension Service (CES). An agent in Lincoln County for the past two and a half years, he gained dairy experience while earning his degrees at Utah State University.

Since settling in Star Valley, his approach has been to offer his services to one farmer at a time before moving on to the next neighbor.

"You have to be good at just stopping by and shooting the breeze," he notes.

"If people are going to share their production information with you, they have got to trust you," Hill continues. "This needs to develop at their kitchen table. They don't want someone from the university telling them what to do."

A young man with hair the color of the sun, Hill says he prefers to present himself as an educational resource.

"You can't go out on a guy's place and tell him how to raise cows. However, you can share information with him that he might want to use. The whole objective and mission of extension is that we are information people.

"There's nobody who is doing everything perfectly. I think everywhere you stop people have questions. It's just a matter of them being able to do the asking. Then they can take what you give and make their own decisions."

Hill isn't the only educational resource for the dairy folks in the community. Extension specialists from Utah, where the industry is more prominent, have been coming to Wyoming since 1998 to provide advice on herd nutrition, reproduction, and management.

A formal memorandum of understanding was signed between UW and Utah State a few years ago, and now dairy specialists Allen Young and Ronald Boman of Logan visit the valley a dozen times a year to join Hill as he travels from farm to farm asking producers what help they might need. (See story on Page 4.)

The trio also promotes membership in the Dairy Herd Improvement Association (DHIA), a recordkeeping entity that tests milk samples from each cow each month and spits out data farmers can use to track the effectiveness of their nutrition and feeding programs, trace the somatic cell counts in their product to check for signs of mammary gland inflammation, organize reproduction statistics, and chart each animal's schedule for breeding, milking, drying, freshening, and inoculating.

The downside is that producers need to be faithful about entering data and also must pay for the service.

"We have studies showing a ten to one return on the investment," Young counters.

"Sometimes you just have to pay money to make money," Hill adds.

Young, who focuses on dairy management, and Boman, a nutritionist, serve a wide intermountain region that includes Utah, western Wyoming, Montana, and Nevada.

They see a trend toward fewer but larger dairies. "It's happening all over," Young says. "There aren't as many farmers, but there are more animals per farm."

The number of dairies in the Star Valley area of western Wyoming has decreased dramatically in recent decades, but farmers left are working to boost the milk output and reproduction capacity of their herds.

In Utah the number of dairy cows has stayed almost the same, but the number of farmers has steadily declined. "If a dairy farmer goes out of business, at least one or two or three dairies are waiting to buy the cows," he adds. Economic viability is hard fought these days for both large and small outfits.

Wyoming's enterprises are concentrated in the Star Valley area and earmark their product for cheese production, but a few dairies are scattered near Cheyenne, Wheatland, Cody, and Sheridan.

"Everything on a dairy farm goes hand in hand," Hill says. "You can make a mistake with a beef cow and can likely make up for it a year later. You make a mistake with a dairy cow, and you can't."

As an example, Young points to a farmer who made a feeding error that caused foot and rumen problems in his cows. Reproduction numbers and milk quality were soon affected.

"The cows are pushed so hard to get every possible drop of milk from them that any mistake in ration formulation or in feeding management can create physiological problems that cause production to go down," Boman says.

"It's like a house of cards falling down," Young adds. "There's a domino effect."

The pressure is different, they say, on beef cows that just have to produce enough milk to feed their calves.

Adding to the management problems of Wyoming dairy farmers, particularly in Star Valley, is the fact that land prices are high, the short growing season limits what kinds and what amounts of crops can be grown, and shipping feed to the state is expensive, Young reports.

In Utah, he notes, the elevation is lower, the growing season longer, the transportation costs less formidable, the infrastructure better, the equipment more accessible, and the employment pool larger.

Dairies in both states, however, face similar problems – their animals suffer injuries, they contract mastitis, they don't get pregnant, they die.

"That means we have a job to do," says Hill.

"Our dairies may be down in number from what they used to be, but these producers are still trying to eke out a living. If we can provide any information that might help them, we'll keep knocking on their doors."

Talking shop in the field are, from left, dairy specialist Allen Young of Utah State University (USU), Hudson Hill of UW's Lincoln County Cooperative Extension Service, Star Valley dairy farmer Roland Gardner, and dairy specialist Ronald Boman of USU.

Plain talk

by Vicki Hamende,
Senior Editor
Office of Communications and Technology

Kelly Johnson's dairy cows are outside eating breakfast.

Inside, Johnson is sitting at his mom's kitchen table using computer-generated charts to seek answers to his herd's reproduction problems.

Elbow to elbow with him are folks who want to help – Hudson Hill of the University of Wyoming Cooperative Extension Service in Lincoln County and Utah State University dairy specialists Allen Young and Ronald Boman.

Johnson's dairy farm in the Star Valley area of western Wyoming is one of three stops the extension representatives will be making on this clear fall day.

Their mission is to share information that might help producers improve the health and productivity of their cows and thus increase their own profits.

Johnson milks 50 to 60 cows on his land. The historic barn, still used, that casts a shadow on his stalls is testimony to the length of time his family has been in the business and to his determination to carry on the tradition.

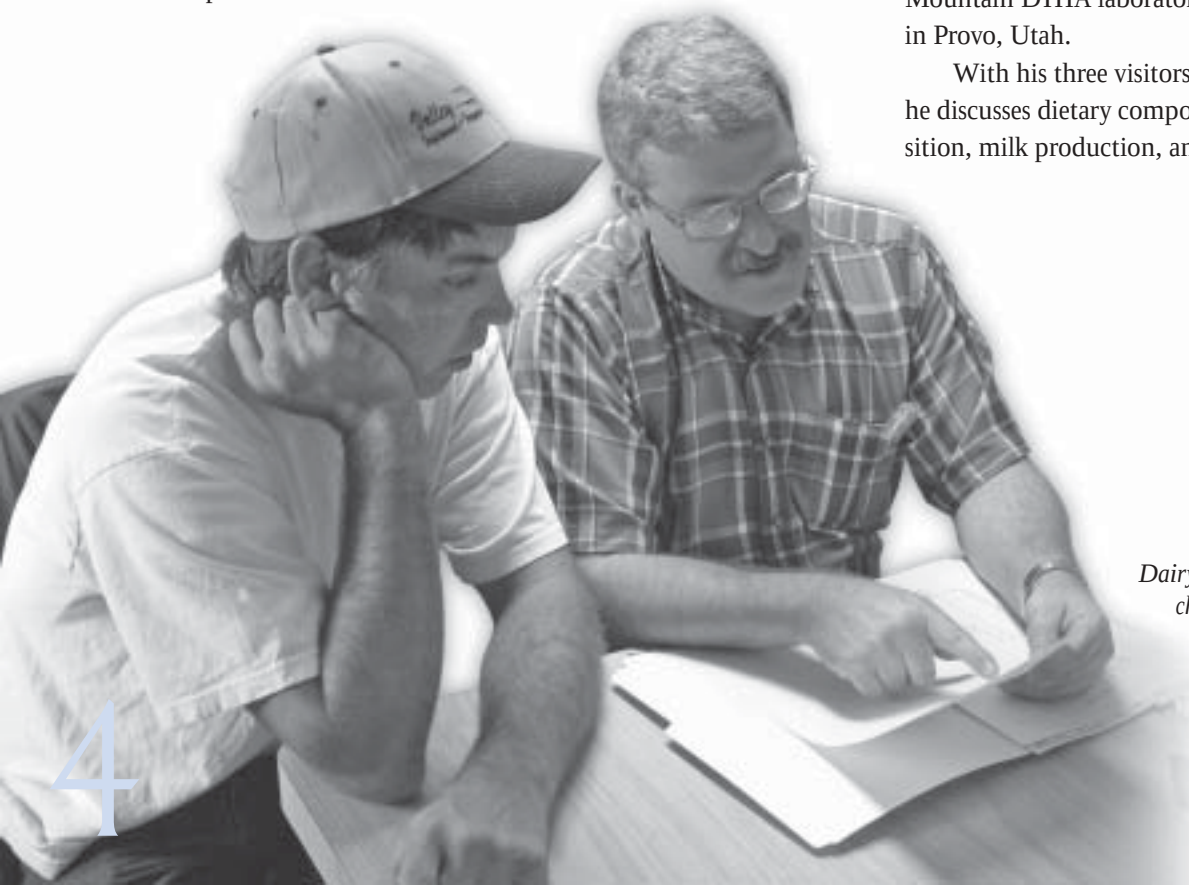
He is already hooked on the Dairy Herd Improvement Association (DHIA) and the snapshots it provides of his herd's fat, protein, and somatic cell counts. He knows how to use the monthly printouts generated at the Rocky Mountain DHIA laboratory in Provo, Utah.

With his three visitors he discusses dietary composition, milk production, and animal comfort and sanitation.

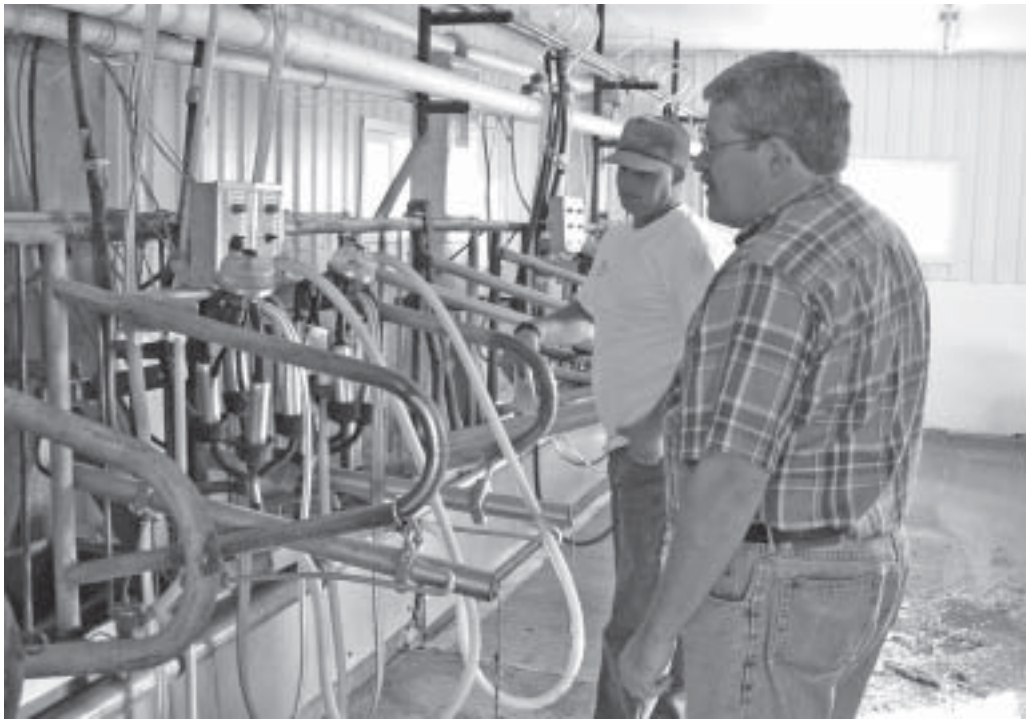
Johnson wonders if the rations he provides are a good enough balance between hay and grain and if they are providing enough fiber. Cows are known to be good "sorters," pushing away the hay to get to the grain.

DHIA graphs reveal that Johnson's switch from a ratio of feeding two wet haylage bales per one dry hay bale to feeding one wet per one dry made an improvement in the fat content of his milk. Extra bicarb also boosted the fat percentage. Adding a higher quality feed protein to his grain mix showed a positive effect on protein levels.

A somatic cell printout shows whether any of his animals are suffering from mastitis, an inflammation in the udder caused by bacterial infections.



Dairy farmer Kelly Johnson, left, studies charts showing the fat and protein content of the milk produced by his cows with Allen Young, a dairy specialist from Utah State University who works with UW's Hudson Hill in Star Valley.



Allen Young accompanies producer Terry Crook on a tour of the dairy farmer's newly expanded milking barn in Lincoln County.

"Is there any way to disinfect free stalls?" he asks the specialists. They recommend keeping these spots for culled cows dry and free of manure as well as liming the areas where the cows lie down and avoiding beds made of green sawdust.

The talk continues for more than two hours. Artificial insemination, teat examination, catching cows in heat, and culturing are on the table.

Johnson theorizes that his reproduction rates might be affected if his cows don't clean up their afterbirth as well as they should. He intends to begin using a recommended dry cow mineral package a full month ahead of calving instead of just two weeks prior to it. They discuss how DHIA reports can be set up "like a buzzer in a pocket" as a reminder of when each animal is due for its shots.

Johnson hopes to spend time visiting his daughter, who is teaching in China. "My somatic cell will really jump up if I am gone two weeks!" he jokes.

"One thing that will help is that DHIA printout," Johnson adds. "I can look and see how each cow has been doing."

The parties make closing remarks, and each jots down tasks to complete before the conversation continues next time.

Talk at Terry Crook's place is of a different vein. The specialists have been working with him on feeding recommendations for three years and are hoping to show him what DHIA can do for his 150-cattle dairy herd. The man has already proven his savvy. He started just three and a half years ago with 28 cows.

"I hear a lot from farmers that they are only going to milk until their kids are out of high school, for the short term, and that they don't necessarily want to implement changes," Hill says.

Crook, who was raised on a dairy farm, has six children ranging in age from 13 months old to 14. He's in the business for life. The fact that he doesn't produce his own feed allows him more time to care for his animals.

Thanks to a newly remodeled and enlarged barn, he now spends less than two hours milking at each session instead of five hours.

"As soon as the barn was finished, we went out and bought fishing poles and all went fishing together," says his wife Amber.

On this day Crook is wearing a T-shirt that reads, "Ahh, the power of cheese!"

Young explains to him that the number one reason people buy into DHIA is to obtain the somatic cell reports the program provides. Because of the size of Crook's herd, he adds, it would be easier for him to keep track of his milk and forage quality with monthly printouts.

Crook is a hard sell, but he agrees to keep an open mind during the next visit when the trio will bring a computer to show him what they think DHIA can do to help him improve his management.

"If I am going to make a living dairy farming," Crook says, "I want to do the best I can."

The siren song of the Y Cross Ranch

by Robert Waggener, Editor
Office of Communications and Technology

Sirens blare as Manny Monserrate steers a Dodge four-by-four over a now dormant pasture on the sprawling 50,000-acre Y Cross Ranch.

Monserrate's a volunteer fireman, but on this particular fall morning, like many other mornings, he's not responding to an emergency in this sparsely populated area of southeastern Wyoming.

Instead, the talkative, rugged ranch manager is heading toward a field full of replacement Black Angus and black baldy calves.

"Dinner bell" on the Y Cross takes on a whole new meaning as Monserrate once again sounds the sirens.

"Come on girls! Come on now! We have a lot of other things to do today!" he shouts, his voice nearly drowned out by the truck's big diesel engine.

"I'm training these girls to come to me. It's a much more efficient way to feed instead of trying to find them," Monserrate explains as he pulls a handle to release protein "cake" from a bin on the flatbed. "I bring the cows to me so I'm not driving all over the pasture burning fuel and wasting time."

Monserrate has also tried vehicle horns and bull horns to lure cattle at feeding time. But nothing has worked as well as sirens, especially in windy, whiteout conditions, the kind of weather that can turn work into WORK on the Y Cross.

The siren is just one of the many tricks Monserrate has brought to the ranch, which is jointly owned by the University of Wyoming and Colorado State University, since being hired manager in the fall of 2001.

His educational background, management skills, and work ethic are helping to turn the operation into a profitable, working cattle ranch.

"Manny is absolutely the greatest ranch manager I've ever seen. He is doing a superb job," says Cheyenne businessman and UW Foundation board member John Clay, one of five members of a committee which oversees the Y Cross. "We have improved the infrastructure of the ranch to the tune of about $100,000 in the past year and a half."

A barn window reflects old agricultural machinery at the Y Cross Ranch while Manager Manny Monserrate poses for the camera.

Strong profits have allowed the committee and Monserrate to upgrade two old houses, build new corrals and shelters for the livestock, drill water wells, and develop springs.

"Manny has done a tremendous job of building the infrastructure and the cattle herd," adds the committee chairman, Jim Heird, associate dean of CSU's College of Agricultural Sciences and director of teaching and outreach for Equine Sciences.

"In three years we have increased weaning weights by more than 100 pounds. That is unheard of, something I attribute to good management," Heird says. "It's a tribute to Manny's ability as a cowman to do some intensive culling in an effort to get us a very productive herd of Angus and Hereford-Angus cross cows."

Y Cross Ranch Manager Manny Monserrate checks over a herd of Black Angus and black baldy cattle while feeding them protein "cake" from a bin on his four-wheel-drive.

Monserrate emphasizes, "We're just in the beginning stages of building this program."

In keeping with the wishes of the Courtenay C. Davis Foundation, which donated the ranch to the two universities in 1998, the Y Cross ran a straight herd of Herefords until recently when a crossbreeding program was initiated.

Y Cross is now transitioning to a herd of Black Angus bulls and Hereford cows to produce black baldy calves.

"We're trying to produce a product that consumers want, but we also have to have an animal that performs in this harsh environment. Sometimes those things are antagonistic with each other, but I believe black baldies acclimatize to this country better than any cow I can think of. You get the hybrid vigor from crossbreeding, which increases the herd's efficiency and performance," Monserrate says.

"You also get a carcass the meatpackers want."

Monserrate turns a lever to shut down the cake auger and then aims his truck back to ranch headquarters, which is located on one of the forks of Horse Creek approximately 26 miles northwest of Cheyenne and roughly the same distance northeast of Laramie.

His outfit passes by fields of prairie gold grass and ravines of gray-barked cottonwood trees and purplish willows, all in their winter dormancy.

The prairie quickly gives way to mountain mahogany, bitterbrush, ponderosa pine, and aspen as hogback-lined slopes climb toward the westernmost point of the ranch some six miles east of Laramie.

A young mule deer buck – obviously in the rut by his swollen neck – thrashes his antlers in a stand of brush while a nearby doe seems unimpressed. Two bald eagles and a small flock of crows fight for the remains of an antelope gut pile, which was left behind by a late-season hunter.

Somewhere up in those hills, elk lie bedded down.

"This is a fantastic ranch. It has so much diversity – open plains, deep canyons, ponderosa forests, and high-mountain meadows. It's a hard country, but a very productive country," Monserrate explains.

When it comes to ranch country, Monserrate knows what he's talking about. Since graduating from CSU with a bachelor's degree in animal science, he's punched cows all over Colorado, Nebraska, and New Mexico, first as a hired hand and then as a manager.

"I love the land. I love being outside. I love working good cattle off a good horse," he says. "It's something you either 'feel' or you don't."

Monserrate says he also enjoys new challenges, and he got one when he accepted the Y Cross job.

Infrastructure was ailing, pastures without water were not being utilized, weaning weights were down, and on top of that he was working for two university foundations and potentially five bosses.

(Continued on next page)

Developing water resources on the Y Cross Ranch has allowed the operation to graze livestock in areas previously not used. Ranch Manager Manny Monserrate, center, helps Lawrence Walters, left, and backhoe operator Paul Schumm of Paul's Well Service & Sons of Cheyenne unload a windmill that will pump water from a recently drilled well in an isolated pasture.

"I was initially a little concerned about that, but it's turned out to be a great working situation. I am really lucky. All five committee members have a background in agriculture, and they have all been so supportive."

One of the members, Platteville, Colorado, cowman Ben Houston, donated 10 Angus bulls from his Aristocrat line to help the ranch start its new breeding program. Houston, who represents the Davis foundation on the Y Cross management committee, is chairman of the National Western Stock Show and Rodeo board.

"Every committee member is dedicated to the improvement of the ranch and working with the ranch manager. Y Cross is a big, raw ranch, and it has been brought back to life by Manny," says Houston, who employed Monserrate as a ranch hand about 30 years ago.

"Ben contacted me about the job, and I gladly accepted the challenge," Monserrate says.

Also on the committee are Frank Galey, dean of the UW College of Agriculture, and Kathleen Henry, president and chief executive officer of the CSU Research Foundation.

Back at ranch headquarters, Monserrate briefly visits with his wife Annette, who has started a new 4-H club in the area, before meeting with the owner of Paul's Well Service & Sons of Cheyenne, which is under contract to install and service windmills on the place.

A new water well and the development of four springs will allow the ranch to graze cattle in places they haven't grazed before.

"The decisions we make are relative to the bottom line of this ranch. We make decisions to make our business work," stresses Monserrate, who once again loads into his outfit, this

time for a trip to the high country to check on a herd of bred yearling heifers.

As the truck nears an old ranch house with outbuildings including a small barn, a chicken coop, and a weathered one-room school, Monserrate briefly turns his attention to the ranch's history.

"I know of at least nine homesteads on this place. There's also an old trapper's cabin. And in the 1950s a group of Menonites established a camp to mine feldspar by hand," he says.

The homesteaders are long gone, the buildings are slowly falling down, but the tales remain.

"This old ranch ain't for the faint hearted," Monserrate reflects.

Dressed in a worn Carhartt vest, dark turquoise Wrangler shirt, and faded blue jeans, Monserrate tips his soiled Resistol cowboy hat as the truck rounds a sharp bend in the rocky, two-track road.

"Hi girls, how we doing today?" asks Monserrate in a voice trying to punch through the 40-mile-per-hour winds whipping across hills to the west. "I'm really proud of this bunch. They have developed themselves without a lot of inputs. They are going to be very productive."

Monserrate and his hired hand Steve Puschak currently run 400 Hereford cows, 130 bred heifers, and 100 black baldy cows. Well and spring developments will allow them to pasture an additional 450 steers and 150 replacement heifers this winter.

"We're trying to blend tradition with modern technology. We still work our cattle on horseback, everything from branding and weaning to moving them from one pasture to another. As rough as this country is, horses are the most efficient way to work them. And there's that old saying, 'The outside of a horse is good for the inside of a man,'" Monserrate quips.

When it comes to improving the livestock and range, he notes, "We take modern technology and science and work them into this environment."

Genetics, a herd-health program that utilizes nutritional supplements, minerals, and vaccinations, and an extensive rotation grazing plan are all part of the formula.

"Weaning weights have gone up dramatically – 125 pounds in three years – while sickness rates have decreased dramatically," he says.

Some of the changes that have led to higher weights have been as simple as turning calves loose in a pasture instead of leaving them in a dusty corral following weaning.

"The first year I was here we left the calves in a pen for four or five days, and we had a lot of sick calves that year. Now we do what we can to keep the calves out of the dust. It's the single most important thing you can do to keep your calves healthy at weaning time," Monserrate says he believes.

He pauses for a moment and then offers, "Essentially, we are weaning the cows."

> "This is a fantastic ranch. It has so much diversity – open plains, deep canyons, ponderosa forests, and high-mountain meadows. It's a hard country, but a very productive country."
> *Manny Monserrate*

Monserrate starts laughing when asked how many hours a week he works.

"You know, I love my job. It's my life," he responds.

"I don't punch a clock. I don't work by the hour. I try to think of what we can accomplish and what we can get done. I know there is still a lot we can do to improve the grass, the water supplies, and our cattle."

With a tone of pride in his voice, the Y Cross manager continues, "I'm committed to making this ranch work. It will be my biggest challenge, but I think it will also be my biggest accomplishment."

Perhaps there's a song in that siren mounted on Monserrate's four-wheel-drive truck.

No rivalry in this UW, CSU operation

by Robert Waggener,
Editor
Office of Communications and Technology

The 50,000-acre Y Cross Ranch, which is jointly owned by the University of Wyoming and Colorado State University, may be the only ranch in the United States co-owned by more than one university.

"It's a rare asset for two universities to have this sizeable of a piece of land, and one of the unique aspects is that there are no state dollars coming into the operation," says CSU representative Jim Heird, who chairs the five-member management committee.

"It's totally managed, run, and operated with its own income. That gives faculty and students a chance to see a working ranch being operated strictly from its own resources," he says.

Another committee member, UW Foundation member John Clay of Cheyenne, notes, "Our goal is to have a profitable working ranch, and eventually we hope to provide scholarships for the ag colleges of both universities."

Clay adds, "The reason the ranch has worked so well is that we have a common goal. It's immaterial whether you're from Fort Collins, Laramie, or Cheyenne. The work we are doing doesn't leave any room for bickering."

There is plenty of room for teasing, though. Just ask the ranch manager, Manny Monserrate, or one of the committee members.

"The neighbors give me hell when UW and CSU play. It's all good natured … I think," Monserrate quips.

Clay notes, "Concerning employees, managers, operations, and the general direction the ranch is going, the debate has always been amicable. But we do have a little fun after each football and basketball game. That goes with the territory, and I'm already looking for a little friendly ribbing about losing the Bronze Boot this year."

Adds committee member Ben Houston, who ranches near Platteville, Colorado, "Our meetings are mostly business, but when CSU plays Wyoming, there's a lot of ribbing going on."

Despite the rivalry between the two schools, Houston says, "The ranch has proved that two universities can work together on a project like this. Both universities feel they are treated equally."

The scenic Y Cross Ranch located near Cheyenne and Laramie is jointly owned by the University of Wyoming and Colorado State University. The ranch has started a breeding program that crosses Black Angus bulls with Hereford cows to produce black baldy calves, which adapt well to harsh environments while also having good carcass traits.

Houston says the Y Cross is one of the few ranches that operates in the black, and that's due to the management team.

"The committee goes into all decisions with open minds," he says.

The main goal of the Y Cross, which is operated as a limited liability company, is to turn a profit as a working cattle ranch and improve its infrastructure, the management team members say.

"I also see this ranch as a huge laboratory. You could have all kinds of instructional and research labs in all phases of agriculture, everything from beef and rangeland production to entomology and geology. This is just one humongous place waiting to be used for research," Clay says.

Y Cross dates back to 1941, when Chicago attorney Courtenay C. Davis purchased his first piece of land at Horse Creek, which is located northeast of Laramie and northwest of Cheyenne, to form the core of the ranch.

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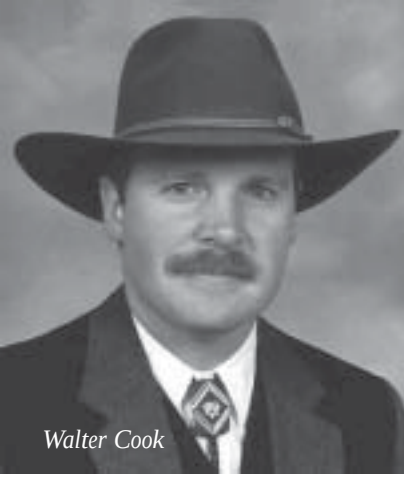

Walter Cook

UW graduate new assistant state veterinarian

by Robert Waggener, Editor
Office of Communications and Technology

Wyoming's new assistant state veterinarian says he believes his graduate work at the University of Wyoming factored heavily into his hiring.

"My experience at UW was probably one of the main reasons I got the job," says veterinarian Walter Cook, who was hired in the fall by the Wyoming Livestock Board to fill the new position.

Cook earned a Ph.D. in zoology and physiology in 1999. He studied under Beth Williams, a professor in the College of Agriculture's Department of Veterinary Sciences.

"Beth Williams is well versed in brucellosis," says Cook, whose dissertation examined ways to prevent the disease from being transmitted from elk to cattle.

"She is a great role model, a great person to learn from. She has great enthusiasm and energy," Cook adds.

Williams says she is pleased Cook was hired.

"This is great news for Wyoming. Walt will do an excellent job in this position. With his background in brucellosis and his understanding of diseases of livestock and wildlife, he will make an outstanding assistant state veterinarian," Williams says.

"He works very well with people with a variety of interests, and he knows how to investigate and manage disease problems," she adds.

Cook worked as a wildlife veterinarian with the Wyoming Game and Fish Department (G&F) for seven years, and he says that experience along with his education helped him understand the complexities of diseases that can be shared between wildlife and domestic livestock.

"The majority of my work centered on disease diagnostics, trying to figure out why animals are sick or dying," Cook says.

"I wanted to diversify my experience a little bit and get back to working more directly in livestock production."

He emphasizes, "The biggest issue we are facing is brucellosis because our state has lost its brucellosis-free status. That means there are a lot more testing requirements before animals can change hands. That's expensive in terms of doing the testing. It's also time consuming for the producers.

"I understand the producers' frustrations with the increased requirements, but I hope they realize that we are doing this to benefit the industry."

Brucellosis is a bacterial disease that causes cattle, bison, and elk to abort their calves. It also causes reduced birth rates and weights and poor reproductive health in livestock. It can lead to undulant fever in humans who have contact with infected fetuses or reproductive tissues.

Cook, who will work under new State Veterinarian Dwayne Oldham, says the second major disease facing the office is scrapie, a fatal, degenerative illness affecting the central nervous system of sheep and goats.

"Scrapie in sheep is the sister disease to chronic wasting disease (CWD) in deer," says Cook, who points out that he learned a great deal about CWD during his career with G&F. "Wyoming has a pretty aggressive program to eradicate scrapie. I am interested in the program, and I am optimistic about it."

Cook will spend much of his time developing rules to control or eliminate diseases of concern to the livestock industry, and he will then work with those who enforce the rules.

"Our mission is to be a servant for the livestock producers of the state," he notes. "One of the things I look forward to doing is interacting with the producers. They are our clients, so we need to know what the issues are for them."


Walter Cook, left, the new assistant state veterinarian, and G&F employee Will Schultz were among the experts who investigated the major elk die-off, thought to be caused by lichen intoxication, on the Red Rim southwest of Rawlins in 2004.

Prior to moving to Wyoming, Cook earned a bachelor's degree in biology in 1989 from California Polytechnic State University in San Luis Obispo. He graduated from veterinary school at the University of California, Davis, in 1994.

Rocky Mountain low: Bighorn sheep

by Vicki Hamende,
Senior Editor
Office of Communications and Technology

The bighorn sheep that grace the pristine slopes of the Wind River Mountain Range may have unwanted company – atmospheric pollution and global warming.

The population of the Whiskey Mountain herd has been declining for the past decade, and University of Wyoming researchers speculate that increased levels of nitrogen in the air may be causing a nutritional selenium deficiency in the stately ruminants.

To investigate their theories, they have set up a remote laboratory in a foreboding environment in the alpine meadows and crags of Middle Mountain near Dubois in western Wyoming.

Weather permitting, they climb a grueling and largely unmarked eight-mile trail to a small community of tents and research plots to sample rainfall chemistry, plants, soils, and to observe sheep and their environment as the animals seek summer pasture above the tree line.

Bighorn sheep in the Whiskey Mountain herd are declining in population. UW research points to a selenium deficiency caused by atmospheric pollution as the probable cause.

The accommodations and scientific stations may be crude by campus standards, but the interdisciplinary approach being taken to investigate the mystery of the dying bighorns is an ecological tour de force.

"Why has this sheep herd existed for 25,000 years and only recently shown this population crash?" questions Professor Steve Williams of the College of Agriculture's Department of Renewable Resources. "If it is selenium, why is the selenium decreasing?"

Williams has teamed with fellow professors Nancy Stanton of the Department of Zoology and Physiology, Jeff Snider of the Department of Atmospheric Science, wildlife consultant John Mionczynski, and a group of Casper College and UW students to seek answers.

"The Whiskey Mountain bighorn sheep herd has been carefully monitored for many years," reports Williams. At a population of 1,600, it was the largest band in the contiguous United States.

When the numbers dwindled in the 1990s to 50 percent of what they had been, the Wyoming Game and Fish Department took notice. Much of the experimentation is now under the wing of UW although funding comes from a variety of sources including private individuals and organizations.

Williams and his colleagues theorize that the selenium deficiency in the summer forage is "a modern phenomena and is

threatened

traceable to recent global atmospheric changes." They speculate that "low bighorn sheep survival and low selenium levels are mediated by changes in the biological and chemical processes in the soils."

The researchers also hypothesize that the alterations "are concurrent with an increase in decomposition rates of alpine soils – an indicator of more pervasive changes that could ultimately impact the hydrological systems in the alpine ecosystems."

The cause of the sheep die-off was originally diagnosed as pneumonia. Close observations of the herd revealed, however, that lambs exhibited many of the symptoms of white muscle disease, an indicator of a lack of selenium in their diets. The illness was known to impact sheep and other domestic animals but never bighorns.

"Their muscles were stiff, and they couldn't move around very well," Williams explains. Other signs included slumped shoulders, diarrhea, and periodontal disease. Their coats were also stretched thin, and the animals appeared to have congestion and labored breathing.

"In that condition, they are very susceptible to mountain lions and other predators," he says.

Selenium is thought to act as a cleaning agent for toxic substances that are produced as animals eat and breathe. It is necessary for growth and fertility. White muscle disease, infertility, milk production responses, and ill-thrift are known to react positively to selenium supplementation.

When the symptoms of deficiency appeared, Middle Mountain ewes with lambs began to migrate back to their lower-altitude winter range where sedimentary geological materials provided natural salt licks.

The distribution of salt blocks containing selenium seems to be boosting the nutritional health of some of the animals.

Williams says the researchers have noted that vegetation selenium on Middle Mountain suffers more decline during years of above-average annual precipitation. "Forage selenium appeared to be lowered in very wet soils and seems to be further lowered by nitrogen deposition," he notes.

It is thought that today's rains are often acidic due to the loading of nitrates in them produced by human activities such as the burning of fossil fuels.

Williams and the UW team are focusing some of their current work on recommendations made by the game and fish and other wildlife experts who first researched the bighorn problems. Those suggestions include investigating the effects of soil wetness and nitrogen deposition on the uptake of selenium by forage plants and studying rainwater chemistry related to air pollutants.

Each summer the renewable resources faculty member maintains and monitors 36 or more small vegetation plots on the mountain from which he draws soil and forage samples to be tested in a winter greenhouse setting on campus. "I'm trying to get an idea of the variability in what's up there," Williams notes.

He also helps to maintain equipment at their high-altitude lab such as microscopes, a pH meter to measure soil acidity, a spectrophotometer for measuring nitrates and other con-

Tent outposts and marked plots dot the research area used for the bighorn sheep project atop Middle Mountain in western Wyoming.

(Continued on next page)

stituents in water, a water deionizing column to produce high purity water, a weather station, and photo voltaic cells to provide electricity, which is necessary to maintain telephone communication with the world below the mountain.

Other researchers who work on the high-altitude project include UW graduate student Kristy Palmer, who is studying selenium levels in pikas and other small mammals (see accompanying story on Page 15), Casper College students focusing on sheep diseases, a Colorado State University student who is conducting water experiments, and Mionczynski. A glaciologist from Utah and an engineer from Idaho also visited in 2004.

The Trail Lake Ranch at the nearby trailhead on Torrey Creek supports the project by providing a cooler, laboratory, and library for the scientists to use and also offering free rooms and meals to those in transit.

At least one person stays at the research site from mid-June when camp opens to late August when it closes. Heavy snow usually greets the investigators and also chases them out. Due to national forest wilderness regulations, everything must be removed from the mountain after each study season. Sixteen or more pack goats are used to help transport food, water, shelter, and equipment back and forth.

"It's difficult doing research in a wilderness environment. You have to be sure that you have what you need up there, and sometimes you don't know what that will be from one trip to the next," Williams notes. "Patience is more important in this kind of setting than any other attribute."

He is practicing that quality now as he, Stanton, and Snider seek more funding to continue their project. "We're trying to pull together all the knowledge we have about the Middle Mountain work and to fill in the gaps," he says. "We have enough information right now that we could probably write three or four publications."

Professor Steve Williams of the Department of Renewable Resources sections off soil and vegetation study plots related to bighorn sheep research at the top of Middle Mountain in the Wind River Mountain Range of western Wyoming.

> "What this means goes beyond just the science of it. This tugs at more than just the intellectual side of things. It tugs at emotions."
> *Steve Williams*

His impatient side points to the red flag that the research has uncovered.

"What is happening with the bighorn sheep may just be an indicator of the ecological urgency of what's going on," he says.

"If more nitrogen comes as a result of global warming, soils that function to retain water will decompose. If they start losing the capacity to hold water, it may threaten watersheds downstream," Williams adds.

"This project embodies some of the things that we as a society of Wyomingites may have failed to hold sacred. This site has been untouched, but the finger of man may have damaged it in terms of atmospheric pollution.

"What this means goes beyond just the science of it. This tugs at more than just the intellectual side of things. It tugs at emotions."

Plucking pikas Palmer's passion

by Vicki Hamende,
Senior Editor
Office of Communications and Technology

If bighorn sheep in the Wind River Mountain Range are suffering from nutritional selenium deficiencies, what's happening to their non-migrating wildlife neighbors?

University of Wyoming graduate student Kristy Palmer of Laramie is studying pikas from alpine environments to answer that question.

For the past two years, the zoology and physiology/natural resources major has been analyzing hair sample data to determine the selenium levels in the tiny mammals.

She is comparing pikas from Middle Mountain, where UW researchers and wildlife biologists have traced low selenium levels in bighorn sheep to the negative effect of atmospheric pollution on forage, with pikas from the Snowy Range and Big Horn mountains.

"My results show right now that pikas from Middle Mountain have significantly lower selenium levels than those from the other Wyoming mountain ranges," Palmer explains. She also studied selenium in hair and liver samples from preserved museum species.

A similar postulated deficiency has led to a ten-year decline in the population of bighorn sheep in the Wind River range.

Palmer, who hopes to become an ecologist, spent summers in her teens wrangling and leading hikes at a guest ranch in the Middle Mountain area and has used scholarship funds to support her research.

She is part of a team of professors from the departments of renewable resources, atmospheric science, and zoology and physiology and other wildlife experts who are investigating the effect of global warming on the decline of the bighorn sheep population of the Whiskey Mountain herd.

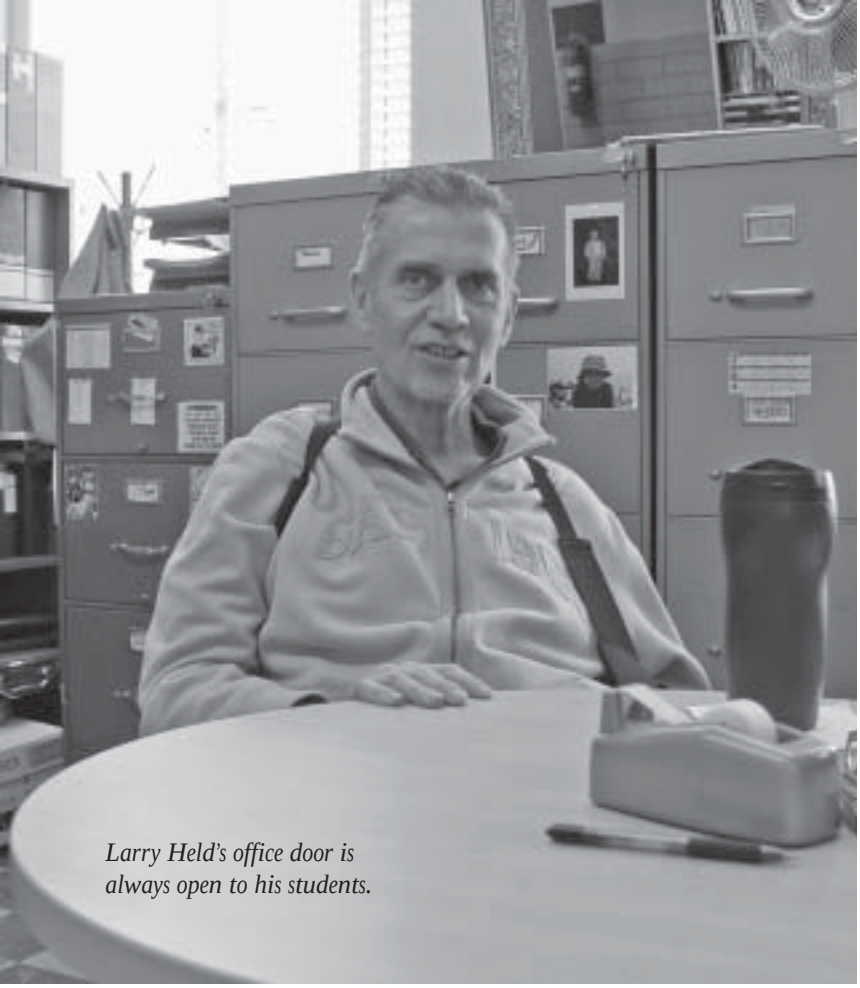
With the aid of a field assistant, Palmer spent a month at the western Wyoming research site trapping and plucking bits of hair from pikas in 2003 and just four or five days in 2004 again stalking the furry critters. "I got better at it," she notes.

The UW student stored her samples in small plastic tubes and sent them to the Oscar E. Olson Biochemistry Laboratories in Brookings, South Dakota, for analysis. She is now interpreting the data for her graduate thesis.

Part of her work also involves conducting on-campus greenhouse experiments on a microcosm of homogenized alpine soils being modified by nitrogen and selenium treatments.

Now far from the isolated setting of her summer projects, Palmer reflects on the peculiarities of remote, high-altitude research. At one point she found herself without a usable stove and forced to eat meals of uncooked noodles. "I was very thankful for warm food after that," she notes.

Kristy Palmer of Laramie, a UW graduate student, poses with one of the pikas she is using to test the selenium levels of mammals co-existing with bighorn sheep in the Wind River Mountain Range.



Larry Held's office door is always open to his students.

Profile in courage

by Vicki Hamende,
Senior Editor
Office of Communications and Technology

Larry Held remembers hauling hay with his father in a rack pulled by horses when he was a little boy growing up on a farm in North Dakota.

"To get the hay packed in really tight for a bigger load, I had to tramp it down into the corners of the hay rack," he recalls. "It was so tempting sometimes to just lie down for a minute in the warmth of the sun, but my father used to yell at me that I had to keep tramping and tramping. I couldn't quit."

If thoughts of lying down and quitting, even for a moment, steal into his mind these days, he remembers the past, and he reminds himself of the job left to be done and of the people who care.

When Held and his wife first drove over the summit 27 years ago to a new life at the University of Wyoming, they weren't at all sure what to expect.

"I was asked, 'How would you like to teach?' when I was hired. It was an awkward question because I had never taught before." Research had been his forte as he had earned bachelor's, master's, and doctoral degrees in agricultural economics.

"Now it's my favorite part of the job description. I am at the point of teaching the children of my former students," the professor confesses. "I am very fortunate to have this job and to have a career in which I love what I am doing and look forward to coming to work."

It takes him somewhat longer to make it to his office than it did in the past, though, and he isn't always able to stay as long.

His wife Vera helps him get up in the morning and showers and dresses him. She cooks his breakfast and drives him to work. Often she stays, assisting with the kinds of tasks that are difficult for a person paralyzed on one side and largely wheelchair-bound.

"I used to be a very independent person, ever since I was a youngster on the farm. I've had to re-evaluate my life and realize that I am dependent on others now. I need help all the time.

"I don't like that, but at some point you just have to accept the way things are. I could give up and not do anything, or I can keep coming back to work and fighting as hard as I can to find my purpose for being alive.

"Quitting isn't an option," he adds. "My wife refuses to let me."

In 2002 Held says he felt like he was "on top of the world" and that life was good. "I never believed anything like this could happen to me."

He was recovering from successful back surgery when he traveled to California to present a paper. Back home again, he began to experience terrible spasms. He went into the bathroom and suffered a stroke. He fell down and hit his head on the tile floor, causing his brain to bleed.

"I came very close to dying that night. It was a close call," he says.

"You wake up one morning and everything is nice. You take life for granted. I sure did."

Held spent nearly three months in the fall of 2002 in a rehabilitation facility in Colorado. "Being in a hospital is like taking a journey," he recalls.

Someone had told him that before he left he would

see the face of God. He did – in the doctors, nurses, and therapists who eased his pain, comforted him in the night, and taught him to walk and talk again. He did – in the family, friends, colleagues, and students who visited him and wrote to him. He did – in the fellow patients who did not survive.

He has learned to enjoy the journey, the moment.

His left side is totally paralyzed. Because his brain was deprived of nutrients and oxygen, it is difficult for him to process thoughts at a normal rate. He fatigues easily. Fortunately he is now able to function without his wheelchair at home and has learned to move his left leg.

"No one seems to know how much improvement I will see," Held says. "My best hope is a miracle from God or perhaps stem-cell research."

He used to be able to type 80 to 90 words a minute. Now it takes him all day to type a single page. He can't read his own handwriting.

Held continues to undergo intensive therapy and to be treated by a neurologist. He is on medication to control the grand mal seizures that have plagued him and to help thin his blood to prevent the development of clots. He has to be selective about what he eats.

"I know there is a purpose for me living; I just have to find that purpose and take it seriously and not squander my time on earth. God has a plan for me. He knows what's best, and He is in control of things."
Larry Held

"I was in perfect health when it happened. Now there are days when I feel ready for the rest home," he says.

"The world is spinning by so quickly, and I have trouble keeping up with it." It is difficult for him to hold a book open long enough to read.

In his dreams he is often "normal" again and imagines himself back on the farm harvesting wheat or in the forest cutting down a tree and watching it fall. "Most people wake up from bad dreams. I wake up from good ones," he says softly.

"I was a religious person before the stroke, and my faith got me through it. Still, I ask myself why I didn't just die that night. I am not afraid of dying. I know where I am going to go when I die. Jesus has earned me a ticket for heaven.

"I also know there is a purpose for me living; I just have to find that purpose and take it seriously and not squander my time on earth. God has a plan for me. He knows what's best, and He is in control of things."

Held's long career has revolved around farm and ranch management as well as teaching agricultural finance and researching profitability and risk associated with integrated sustainable farming systems like precision production. He has enjoyed collaborations with colleagues in other departments and says he is proud of the fact that the business background students receive in College of Agriculture programs prepares them for work both on the land and in international corporate settings.

"Our students are such bright, wonderful people. They do well in spite of us. They have so much courage to take the initiative to step forward. The most rewarding part of a job like this is making friends with the students and watching them go on with their own jobs and families."

The importance of his role in nurturing their accomplishments is documented in the list of classroom awards he has received.

Held started teaching again in the fall of 2003. He carries a half-time load, offering one class a semester and advising several graduate and undergraduate students.

"It was scary at first. I wasn't sure if I could cut the mustard, and I didn't want to do the students a disservice."

He has found them to be supportive, helpful, and

(Continued on next page)

understanding of his situation. "That has made the transition much easier," he says. His colleagues in the Department of Agricultural and Applied Economics, the associate deans, and the dean have also rallied behind him.

"I can't say enough about how nice they have been to me. I always knew they were wonderful, but now that has come into clear focus."

Held is proud of his wife as well as his son and daughter, who are both UW students.

"It has been hard for my kids and for my wife in particular. Being a caregiver is almost worse than being the principal sick person," he says.

"They see me on my good days and on my bad days. Sometimes I break down and cry. Sometimes I hurt a lot inside." It pains him to look outside, too, and to realize all of the things he can no longer do.

Held found out after he arrived home from the hospital that he had become a grandfather. "I love that little boy so much," he says of his son's son. "He's a gift from God."

He hopes someday to return to Devils Lake, North Dakota, where he was born in a Norwegian community to German and Finnish parents.

"I would like to walk around and show my grandson the farm where I grew up and the fences I made with my father, fences that are still standing," Held says. "They're so sturdy that the devil himself can't break them down," his father used to joke.

"I'd like to show my grandson where my family is buried just east of the farm."

Held's father had 13 brothers and sisters, and his mother had 17. "I'm blessed with a lot of cousins. We love to share stories about when we were kids and laugh a lot recalling our mischief," he adds.

He also remembers the support of his family.

"When people do good things for us, sometimes we can't repay them. But we can do better things for other people and pass them along.

"That's what my students and colleagues have done for me. They've given me a chance to walk back and start out all over again."

A teacher, a friend

by Vicki Hamende, Senior Editor
Office of Communications and Technology

"If you were to look up university professor in the dictionary, you would see Larry Held's picture there," says Dale Menkhaus, his colleague in the Department of Agricultural and Applied Economics. "He loves to teach."

Although his long recovery from a stroke sidelined him for a year, Held returned to the College of Agriculture on a half-time basis in the fall of 2003. (See previous article.)

"His students feel very comfortable around him and immediately attach themselves to him. He has shared their trust. His classes are rigorous, but the students respect him," adds Menkhaus.

"We are really fortunate to have Larry on the faculty. He contributes a lot to the department. It's not easy for him. He has to work extra hard to do things, but he comes in every day."

Graduate student Heath Van Eaton says Held's personal teaching approach "is probably one of the most effective methods I have been exposed to from a college professor."

Van Eaton adds that Held "is always willing to stop in a hallway to talk to you. That makes a student feel very important.

"You know you have a special relationship with a teacher when you can see him outside of school and still be able to relate comfortably with him."

Held heads the thesis committee for Stephanie Hansen, who is earning a master's degree in the department. "He is a very responsible and thorough chairman, and he has an amazing way of offering guidance without trying to control the direction of my research," she notes.

Chris Bastian, now an agricultural marketing specialist for the University of Wyoming, took courses from Held as an undergraduate student and later served as his teaching assistant.

"His classes and exams were hard compared to a lot of instructors I had, but students loved his classes, me included," Bastian says.

"Larry took the extra time to be both friend and mentor to any student asking for help. You wanted to do well in his classes because you knew he cared how you did.

"As I look back, there have probably only been a handful of people who have truly shaped my professional life, and Larry is one of them. He started treating me like a colleague before I ever graduated. I have had the opportunity to collaborate with Larry on various projects since my undergraduate days, and he still approaches me with that same caring mentorship."

> "Larry takes the extra time to be both friend and mentor to any student asking for help. You want to do well in his classes because you know he cares how you do."
> *Chris Bastian*

Bastian adds, "It really is no wonder he has a wall full of teaching awards. That passion for his students still drives Larry, even today."

Matt Fleming took undergraduate classes from Held, who now serves as his head professor and graduate committee chairman. Fleming has also been Held's teaching assistant.

"I would say that Larry is the truest example of the ag school's motto, 'Students, the reason we are here,' that this department has seen. Educators like Larry are assets who are becoming harder and harder to find," Fleming says.

Associate Professor Ed Bradley was the department head when Held suffered his stroke and when he returned to work.

"Students are at ease with him, and Larry is able to develop a level of student interest in them in management issues and aspects of economics that many other instructors would have difficulty creating. You can see the real learning accomplishments that Larry helps students achieve," says Bradley.

"He doesn't spoonfeed them. The students are responsible for their own learning. His courses are demanding, but the quantity and quality of what is learned is impressive," he adds.

"A very positive, almost family relationship develops between Larry and his students. They are real comfortable with each other. It makes for a very supportive and effective learning environment.

"His colleagues have loved seeing him back from a faculty standpoint," Bradley says. "He has excellent judgment and character, and it's wonderful to have him here to participate in department activities.

"Yet it is his value as a human being that is most important. Larry is very caring and very concerned about the welfare and accomplishments of others. That's what makes him such a good partner in the college."

Brian Lewton is a second-semester graduate student in agricultural and applied economics.

"From the instant I first walked into Larry's office, I felt like I had known him for years. We have a lot in common, and he and his wife Vera have always treated me just like I was their own son," Lewton says.

"Larry's devotion to his students, whether they are graduates or undergraduates, sets him apart as one of the premier professors in the ag and applied economics department and the university as a whole.

"Whether in the classroom or just one-on-one in his office, Larry expends tremendous effort to make students feel like they are his equals. For this reason he enjoys lasting personal relationships and great academic success with those he instructs."

Lights! Camera! Action! CES stars

by Vicki Hamende,
Senior Editor
Office of Communications and Technology

The actors and actresses assembled their own props, performed without makeup, improvised forgotten lines, and endured the director's admonitions to "Pick it up, pick it up!"

Nevertheless, if academy awards were given for impromptu creativity and film-making fun, a group of College of Agriculture would-be celebrities would indeed be carrying Oscars down the red carpet.

Meet the stars of "From the Ground Up," a seasonal series on horticulture tips produced by the University of Wyoming Cooperative Extension Service (CES) for viewers in the Casper-based KTWO television audience.

Jim Gill of Washakie County doubles as the food network's Emeril LaGasse to teach Wyoming's gardeners how to care for tomatoes and as a private investigator sleuthing in the dark for hornet and yellow jacket nests.

Sheridan County's Scott Hiniger, aka "Dr. Lawn B. Good," presents formulas for lawn fertilization and harvesting tips for vegetables.

The mild-mannered Donna Cuin of Natrona County serves as the "straight man," suppressing giggles as her somewhat slapstick partners toss cucumbers and occasionally eat the props.

All are members of the CES Profitable and Sustainable Agricultural Systems Initiative Team working with Natrona County's Tom Heald to put together educational vignettes on common sense growing that air at 6:11 and 10:11 p.m. Fridays during peak planting periods.

Scott Hininger as "Doctor Lawn B. Good" first complicates and then simplifies the issue of cool-weather lawn fertilization for viewers.

Directing the seemingly motley crew is Judy Logue of Casper, a Master Gardener and CES volunteer extraordinaire with television filming and editing experience dating back to the pre-digital days of piecing together productions with scissors and tape, she insists.

"We get the same calls every year about horticulture, so it's just a matter of brainstorming to come up with new ideas for presenting helpful information," Logue explains.

"We try to keep our approach laid back so that it appeals to people sitting around the table drinking coffee," she adds. "If they see a little humor, they might remember it when they're thinking about what they are going to do for the weekend with their yards and gardens."

TV watchers are unlikely to forget Gill's foray into gourmet cooking as he prepared a bacon, lettuce, and tomato sandwich for the camera while simultaneously warning green thumbs about the blossom-end rot disease that can attack tomatoes, leaving leathery black spots.

After an outdoor shoot that finds him kneeling next to a tomato plant in a CES community garden in Casper, the camera follows Gill to a kitchen where he explains the situation while slapping mayo on bread.

"We refer to this problem as vacationer's disease," he says of end rot. "Why? Because typically the gardener does a fine job of watering and fertilizing the tomatoes early in the growing season and then takes a week or more of summer vacation about the time they are really starting to develop and grow and fruit. The plants become stressed due to a lack of moisture and nutrients which hurts the young tissue on the tomato." By this time Gill has sliced some of the red veg-

Donna Cuin plays the questioning gardener to Scott Hininger's knowing horticulturist in a television piece for "From the Ground Up" on when to harvest vegetables.

shine

etable and added it with lettuce to his feast.

"Other factors may include trying to set the plants out too early before the soil temperature is above 55 degrees or injuring the root system while hoeing. Too much nitrogen can contribute to this problem as well.

"So, make sure you give those tomato plants a good drink of water when they start drying out, especially about the time they start to blossom," he smiles at the camera, layering bacon on top of the other ingredients and squishing the sides of his sandwich together.

"Oh, man, this is what I love about gardening in Wyoming - my BLTs for lunch!" he announces as he helps himself to a huge bite. The fruits of his labor now dripping down his chin, he guffaws, "Eat your heart out, Iron Chef!" That wasn't in the script.

Undaunted, director Logue sighs, calls it a wrap, and indicates by the smile she tries to suppress that she is used to Gill's ad-libbing.

Equally good-humored is Hininger as "Doctor Lawn B. Good," complete with a white jacket and stethoscope necklace. His job while on camera is to let viewers know that they should do one-

Judy Logue, a Master Gardener and CES volunteer in Natrona County, is applying her background in television production to film the one-minute horticulture tips that appear on Casper's KTWO station.

third of their total yearly lawn fertilizing once the evenings begin to cool.

To explain that, though, the good doctor first scribbles an impossible mathematical formula on the board, repeatedly points his finger at the television audience as he adds verbal gobbledygook to the confusion, and finally caps the mystery by confessing that "about a third" will take care of it.

The doc leaves his colleagues in stitches.

Hininger gets serious in a later TV spot when he discusses the proper time to harvest fruits and vegetables such as melons, squash, and cucumbers. He enlightens Cuin, who is deadpanning the role of a typical gardener, by telling her that early morning picking assures the highest nutrition and the most flavor. His earlier plan to have Cuin point to a perfect cucumber while he literally threw aside an imperfect one has been scrapped as being unsafe.

Gill then returns to the stage to warn that hornets and yellow jackets love "the sweets and meats" of barbecues. "These rascals can ruin the party because when they get ornery, they can sting you multiple times," he cautions. "To control them, we need to find where they are nesting at night."

Creating visions of backyard sleuths ala Sherlock Holmes, Gill urges folks to wait until it's completely dark and then to don protective clothing, arm themselves with a flashlight and pressurized hornet spray, and soak the nests until the critters are history.

The messages are always simple, but the reasoning behind them comes from the research-based College of Agriculture stockpile.

Gill is quick to compliment CES Director Glen Whipple for supporting "From the Ground Up" with funds for equipment, traveling, and software. Heald has also secured grants for the project. The next goal is to consider producing the informational TV segments year round.

As it is now, the crew gets together often during the growing season, spending three or four hours brainstorming scripts, more time shopping for goods and assembling props, and at least a half day filming.

"It's a fun bunch once they get going," reports Logue.

Sometimes the on-air humor creates itself as when barking dogs, rumbling semi-trucks, the wild wind, and unsuspecting passers-by intrude in the middle of filming.

The stars don't mind. "Soon we'll be signing autographs," they quip.

"Oh, man, this is what I love about gardening in Wyoming – my BLTs for lunch!" Jim Gill enthuses as he films an informational segment about growing healthy tomatoes for the "From the Ground Up" horticulture TV spots.

Spinning wheat straw into wood

by Vicki Hamende,
Senior Editor
Office of Communications and Technology

His company's motto is "Charting the path to a sustainable future."

Heath Van Eaton intends to develop that path as founder, president, and general manager of Heartland BioComposites, a company that combines recycled plastic and wheat straw to create a solid wood substitute.

"It's a win-win-win situation around the whole spectrum for agriculture and the environment," he says.

It is also a labor of love for Van Eaton, a master's candidate at the University of Wyoming in the Department of Agricultural and Applied Economics.

Raised on a grain farm in northwest Kansas, Van Eaton says he has always enjoyed working in agriculture.

"When you are out there on a day-to-day basis, you see all the cares and concerns of people in the industry," he says. "From the breakfast table in the morning to the dinner table at night, I heard about the business and grew to love it. I wanted to become an entrepreneur focusing on value-adding."

Van Eaton interrupted his community college career to gain four years of experience as a director at a large food service management company. He came to UW in 2001 after completing a two-year program at Sheridan College and also working for a start-up agribusiness management company. He earned his bachelor's degree in agribusiness.

> "This composite is as strong as wood in many regards and can be produced more cost effective than wood for many applications."
> *Heath Van Eaton*

The idea for Heartland BioComposites developed in the late 1990s when he learned about efforts underway to produce a new substance by combining wood waste with plastic. Remembering the mud composites he had made growing up on the farm, he wondered if wheat cellulose could substitute for the wood waste.

"My innovative side from being around agriculture taught me that if you need something, you make it. Being business minded, I also knew that I needed to go out and team up with industry professionals to develop a technology and then commercialize it," he explains.

His formula involves grinding, washing, and drying recycled plastic from Rocky Mountain area collection centers into flakes. This substance is then combined with wheat straw that has been crushed into different unique particle sizes of various densities.

"We have developed machinery that will compound things together and enhance the bond between the wheat straw cellulose and the polymer," Van Eaton says.

The resulting substance, in round or square profiles, can be used for fence posts, roofing materials, decks, railroad ties, utility poles, and a variety of other products.

"This composite is as strong as wood in many regards and can be produced more cost effective than wood for many applications," he reports.

Van Eaton and a nationwide management team he has assembled have been leasing a process laboratory for the past two years to develop their technology on a small scale by engineering the machinery that compounds and forms the wood substitute.

He knows of one other firm that is experimenting with wheat straw. "We process differently than they do. We are focused on recycled plastics, and our composite is much stronger. We are two different types of companies."

Financed through a combination of private capital and some grant funding, the College of Agriculture

student is currently securing markets and working with the Goshen County Economic Development Corporation to lease and later purchase space in a proposed industrial park in Torrington to build and operate Heartland BioComposites.

"Everything is coming together, we hope, and our target is to be in a production status by the fall of 2005," he says. "It's a very doable project."

Van Eaton says he is anxious to make use of the largely wasted wheat straw produced by Wyoming growers. While some of it is earmarked for erosion control, animal bedding, and roadside reclamation efforts, most of it, he says, is degraded or blown away.

He has already contracted with two farmers for 2,500 tons of wheat straw for his first year of operation and hopes to be purchasing as much as 18,000 tons five years from now.

"There are many proactive, progressive farmers in Wyoming willing to take risks with us to help develop these new technologies," he notes. "Farm subsidies help, but they're not what farmers really want. They want to be independent and self-sufficient and to find value in what they have and what they can do with it."

In addition to eventually paying more than $1 million to cooperating farmers, Van Eaton envisions another $1 to 3 million going to plastic suppliers and $1.5 million to the 50-60 employees his company would need.

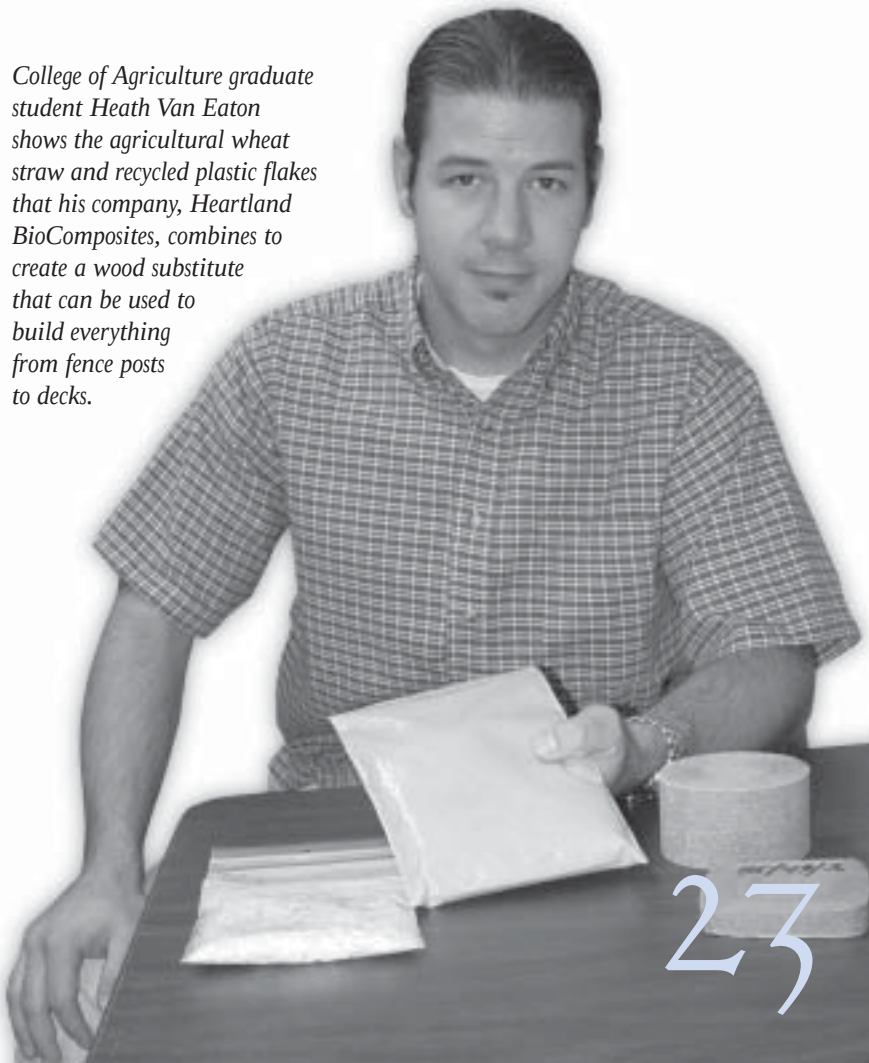
"The people of Wyoming are the ones who will benefit from having this factory built in our state. The economic benefits that will be realized from this enterprise are very apparent."

As Van Eaton charts his company's path to a sustainable future, he says he is busy all the time traveling and meeting with people. "I am right in the middle of everything," he says, pointing out that he is side by side with his engineers every time they run a new lab test.

"For me it has been six years of nonstop work," he adds, praising his wife and family as well as the agricultural and applied economics department for the support he has received. "Everyone has been very excited for me and this company. People have been helpful when I have had questions and concerns and cooperative when I have needed time off."

The experience he has gained in business management in the past has convinced him that he understands what it takes to build a plant and develop a company culture.

"This is what I want to do, and this is what I care about. I can't wait to be able to devote all my energy to the company. It has taken a lot of time management to work on this and school at the same time, but I've always been able to stay motivated and concentrate on my objectives."



College of Agriculture graduate student Heath Van Eaton shows the agricultural wheat straw and recycled plastic flakes that his company, Heartland BioComposites, combines to create a wood substitute that can be used to build everything from fence posts to decks.

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Agricultural and Applied Economics

Professor Dale Menkhaus of the Department of Agricultural and Applied Economics and colleagues in Russia and the University of Wyoming accounting department have written an article titled "Food Retailing and Supply Chain Linkages in the Russian Federation" that will appear in the *Journal of East-West Business.*

The paper focuses on the evolution of Russian food retailing and linkages between and among firms in the food supply chain. The research contributes to work completed by Menkhaus when he was a Fulbright Scholar at Saratov State Socio-Economic University in Saratov, Russia.

Professor David "Tex" Taylor, associate professors Roger Coupal and James Thompson, and Assistant Research Scientist Tom Foulke have completed a paper titled *An Economic Analysis of Grazing Reduction on BLM Land in Fremont County, Wyoming.*

Drought, rural residential development, and environmental concerns have increased public awareness of livestock grazing on public lands. The paper concludes that the loss of employment associated with decreases in Bureau of Land Management grazing in the county may not be readily replaced by other economic activities.

The collaborators have been approached about conducting similar analyses for other counties in the state.

In other news, Marketing Specialist Chris Bastian has completed work on a doctoral degree in agriculture and resources economics at Colorado State University. His dissertation deals with the economics associated with banning snowmobile use in Yellowstone National Park.

The department is seeking an assistant professor to fill a new teaching and research faculty position in agribusiness. The new educator will focus on risk analysis and management for farms and other small and rural firms operating in a regulated, natural resource-based business environment.

Animal Science

The Department of Animal Science is a key player in the University of Wyoming's efforts to expand its biomedical research capabilities.

Of six UW projects recently funded by a $13 million grant from the National Institutes of Health (NIH), three are focused on animal science research that can be applied to human health.

To receive more than $1 million each during a five-year period are College of Agriculture professors Bill Murdoch and Tod Hansen in the category of fertility and women's health and Steve Ford in integrative physiology.

The money is primarily being used to train and support the work of post-doctoral, graduate, and undergraduate researchers.

Those under Murdoch's wing are studying the relationship between vitamin E, ovarian cancer, and fertility. The area of concentration in Hansen's laboratory is the effect of maternal undernutrition on fetal heart gene expression. Ford's effort involves looking at vascular adaptations in placentas as a result of maternal nutrition restriction.

The $13 million NIH grant is the largest single research award in the university's history.

Family and Consumer Sciences

Construction is currently underway for the new Early Care and Education Center, and funds are being sought to provide equipment for the joint College of Agriculture and College of Education facility.

Scheduled to open in the summer of 2005, the center will serve 90 to 100 infants, toddlers, and children and will offer university-level preparation for students in family and consumer sciences, nursing, kinesiology and health, developmental psychology, and communications disorders.

Special features of the 9,200-square-foot building at 30th and Lodgepole streets will include a multipurpose area for gross motor activities, parent meetings, and multi-age programs; a breastfeeding support room; an on-site nursing station with temporary sick-child facilities; a science/solar room; an observation room with computers and video capabilities; and a full kitchen with child-sized space for nutrition awareness activities.

Persons who would like to donate funds to purchase equipment and other educational resources for the new center are asked to contact Anne Leonard in the College of Agriculture Development Office at (307) 766-3372 or aleonard@uwyo.edu or Associate Professor Karen Williams, head of the family and consumer sciences department, at (307) 766-4145 or cachevki@uwyo.edu.

As part of the campaign, a special fund to furnish one of the preschool classrooms in the new facility is being established to honor Judy Powell, former head of the department and later vice president for academic affairs and dean of the Outreach School. Now retired, Powell was instrumental in promoting the need for the Early Care and Education Center.

Molecular Biology

The Department of Molecular Biology is establishing a scholarship to honor the late Theodor Hanekamp, an assistant professor who earned two master's degrees and a doctoral degree from the University of Wyoming.

A native of Germany, one of Hanekamp's areas of expertise was yeast biology. He was studying an unusual invading microbe that appeared to be altering the shape of yeast cells. If the organism proves to be a natural enemy to fungi, it could help fight common diseases in humans and animals, ensure food safety, and increase agricultural productivity.

Another of his research projects involved the use of bioinformatics to search for new drug targets for the pathogen that causes malaria.

Hanekamp received bachelor's and master's degrees from Oldenburg University in his homeland before coming to Laramie as part of a UW exchange program.

After earning his UW degrees, he conducted postdoctoral research both here and at the University of Texas and Stanford University. He joined the UW faculty in 2002 and taught classes in biochemistry and other topics in molecular biology.

He is survived by his wife, Associate Professor Pamela Langer of the Department of Molecular Biology, and two children.

Persons interested in donating to the scholarship fund can mail their checks to the College of Agriculture Development Office, Department 3354, 1000 E. University Ave., Laramie, WY 82071.

The scholarship will be awarded annually to a student studying molecular biology.

Plant Sciences

A group of scientists from the Department of Plant Sciences traveled to Australia in the fall to attend conferences, make presentations, and gather information about potential collaborations involving the University of Wyoming and colleagues in other nations.

Professor Jim Krall of the Torrington Research and Extension Center gave presentations on annual medic research in Wyoming at the Second Australian New Crops Conference at the University of Queensland's Gatton campus and at the Waite Institute at the University of Adelaide.

Krall also presented a poster on alternative crops in Wyoming and Nebraska at the Fourth International Crop Science Congress in Brisbane, Queensland, and discussed the same topic at the Mallee Research Station Field Day in Walpeup, Victoria.

He attended the Australian Oilseeds Federation Forum in Melbourne and also spent three days in New South Wales and Victoria looking at methods of intercropping cereals and annual pulse crops into alfalfa.

Torrington center colleagues Jack Cecil, a UW research scientist, and Jerry Nachtman, a research associate, accompanied Krall. Cecil made a poster presentation on adjustable row spacing and population studies during the new crops conference while Nachtman's focus was on looking for new crop alternatives as well as information on precision and global positioning system farm practices.

Abdel Mesbah, a research scientist at the Powell Research and Extension Center, presented a poster on wild oats control in barley at the crop science gathering and also took a tour highlighting sugar cane production in the area.

Former UW research scientist Craig Alford presented three papers on behalf of Professor Steve Miller, head of plant sciences, at the Australian meetings.

Renewable Resources

Ginger Paige is the new water resources specialist for the Department of Renewable Resources.

She will spend about two-thirds of her time working on water resource issues in an extension capacity and the other third in research. Two of the key issues she will focus on are the impacts of drought and of coal-bed methane development on

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water resources in Wyoming.

Paige obtained a bachelor's degree in political science in 1984 from Colorado College in Colorado Springs. She then spent 3 1/2 years with the Peace Corps in West Africa. She completed a master's degree in soil physics at the University of Massachusetts and then earned a doctorate in watershed management from the University of Arizona.

Before coming to UW, Paige worked for 12 years as a research scientist with the University of Arizona and the Southwest Watershed Research Center operated in Tucson by the U.S. Department of Agriculture's Agricultural Research Service.

In other news, Professor Tom Thurow, head of the Department of Renewable Resources and a recognized leader in his field, has been given the "Trail Boss Award" by the Wyoming section of the Society for Range Management for his contributions to the profession of rangeland management science.

Since he arrived in 1999, the department's undergraduate and graduate programs have increased by more than 15 percent, bucking a national downward trend of university enrollment in natural resource disciplines.

Veterinary Sciences

Gerry Andrews, who has been at the forefront of the nation's fight against infectious diseases, has joined the Department of Veterinary Sciences as an assistant professor of bacteriology.

His expertise in pathogenic *E. coli*, bacterial dysentery, bubonic and pneumonic plague, and anthrax stems from a long career as a research scientist for the U.S. Army.

As a College of Agriculture faculty member, he will be adding brucellosis and tularemia to his repertoire of research areas.

A native of Springfield, Pennsylvania, Andrews was educated in biology and microbiology at Penn State University and the University of New Hampshire. While on active duty in the Army's Medical Service Corps, he earned a Ph.D. in microbiology at the Uniformed Services University in Bethesda, Maryland.

Andrews then began the first of two stints with the U.S. Army Medical Research Institute of Infectious Diseases at Fort Detrick, Maryland, eventually serving as head of bacterial pathogenesis and immunology and ultimately as division chief in charge of bacteriology.

The department is also seeking an epidemiologist to serve as a bridge to state and federal veterinarians in the event of disease outbreaks and teach courses in medical microbiology and in the epidemiology of infectious diseases. In addition, the department will hire a virologist to fill a faculty opening.

Two new technicians are on board to help with brucellosis research.

Academic Programs

The College of Agriculture currently has a combined undergraduate and graduate population of 805 and could break its previous fall enrollment record of 848 in 1994.

Early University of Wyoming student counts announced at the beginning of the semester usually grow by 20 to 40 at the end of the semester as outreach students, late enrollees, and students changing to agriculture majors are factored in, according to Pepper Jo Six, the college's recruitment coordinator.

The 2003 final fall enrollment was 799, and the 2002 figure was 784. The college had 830 students in 1998 and 823 in 1992. The lowest total since 1990 came in 1993 when there were 779 graduates and undergraduates.

"I am hoping that we exceed the enrollment of 1994 and have at least 850 students enrolled in our college programs," says Six.

"To obtain this number, I am targeting students on campus by using every avenue to educate them on what the College of Agriculture has to offer," she adds. Six also travels throughout the state and region to seek potential recruits.

The current 805 figure represents 655 undergraduate and 150 graduate students. The previous high for fall undergraduate enrollment was 681 in 1998. The college had 156 graduate students in 1993.

Cooperative Extension Service

A grants coordinator and an agricultural and natural resources area educator have been added to the staff of the Cooperative Extension Service.

Jennifer Jones is the new grants coordinator. She previously worked as part of the Cross Commodity Research and Outreach Program at the University of Arizona. During her four-year tenure she helped secure more than $250,000 to support the program. Jones also helped with the university's state irrigation projects and served as a research specialist for the school's Pima cotton breeding program.

She received a bachelor's degree in horticulture and plant science from Kansas State University and a master's degree in plant breeding and genetics from the University of Wisconsin.

Bridger Feuz has joined CES as the new area agricultural and natural resources educator based in Evanston. His past work has involved educating livestock producers and breeders about how DNA technology and other tools can be used to make genetic improvements in their animals.

Feuz has a bachelor's degree in agricultural business and a master's degree in agricultural and applied economics from the University of Wyoming.

Agricultural Experiment Station

Professor Gary Moss of the Department of Animal Science is helping to develop programs, priorities, and a leadership structure for the new University of Wyoming Sustainable Agriculture Research and Extension Center (SAREC) near Lingle.

His work comes as part of his participation in the Experiment Station Committee on Organization and Policy (ESCOP)/Academic Programs Committee on Organization and Policy (ACOP) Leadership Development Program.

During his year of participation in the leadership program, Moss is collaborating with a team of colleagues from other departments in the College of Agriculture to assist the dean in planning for SAREC.

The participants are preparing a mission statement, criteria to direct decision making on the kinds of research and outreach activities the center will provide, and guidelines to help SAREC Director Jim Freeburn plan specific programs.

Moss and the planning committee are also charged with recommending how the development of facilities and projects should be prioritized.

The group is putting together guidelines for making operational decisions, organizing and funding staff positions, and creating an external advisory board.

As part of his leadership training, Moss attended a week-long meeting last spring in Indianapolis, Indiana, for others involved in the ESCOP/ACOP leadership program and will also participate in a similar gathering in Washington, D.C., at the end of February.

Ag Development

The holiday season is a time of year for reflection and thanksgiving. The development office sends thanks to the alumni, friends, businesses, and others who help the College of Agriculture. Their support may go to 4-H youths, students, or faculty researchers or to efforts to improve classrooms and buildings. The help, encouragement, and donations of those who care do touch lives and make a difference.

As an example, the collaborative work that Department of Plant Sciences' faculty members are conducting with colleagues in Australia was originally helped in part by funds from Global Perspectives in Agriculture, a program established by a private donor. This fall, 151 students received financial assistance from the college scholarship program, again sponsored by constituents.

Cooperative Extension Service educators took part in professional development opportunities. The workshops they attended throughout the fall and early winter were made possible through a memorial gift fund. In the spring students will be able to enjoy internships or field work funded by the "Beyond the Classroom" initiative that helps integrate class work with hands-on learning experiences.

For those considering year-end giving, please remember the College of Agriculture.

Y Cross collaboration *(continued from Page 10)*

Shortly after Davis died in 1995, a foundation in his memory donated 50,000 acres to the two universities to serve as a living laboratory for agricultural students and faculty members.

Monserrate says he was hired to manage Y Cross as a working cattle operation, ensuring that it turns a profit, and that he will make it available to faculty and student researchers as long as their efforts help the ranch in some way.

He notes that Stephen Enloe, weed specialist with the UW College of Agriculture's Department of Plant Sciences, UW Professor Emeritus Tom Whitson, and researchers from CSU are planning to use biological controls on the Canada thistle on the property.

Hearing that spayed heifers don't gain like their unsprayed counterparts, UW animal science Assistant Professor Steve Paisley implanted a group of "fixed" heifers on the Y Cross with a synthetic hormone and learned that the hormone made no difference in weight gain, Monserrate reports.

"Professor Steve Williams has brought his range management classes out here," he adds. "I like to show students what a real-world working cattle ranch is like. This is a no frills, hardcore ranch. It's not a summer camp."

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