Programs & People

University of Idaho
College of Agricultural and Life Sciences
Winter 2010


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Quenching The Thirst

Who uses Idaho water and where?
Award-winning technology offers answers

Water drops from a single leaf. It is easy to take water for granted in a state as water-rich as Idaho. Yet each summer brings stories of mounting competitions among southern Idaho crop and fish producers. Native Americans and long-time residents have water rights with priorities over more recent water users. As our cities grow, how do needs of urban populations square with needs of agricultural producers? UI CALS and UI Extension scientists and educators help address water issues in many ways. Learn about some of them beginning on page 10.

Photo by MACKON@DREAMSTIME.COM

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LETTER FROM THE EDITOR

Few things are more important than water, which is why this issue devotes 10 pages to ways scientists and educators in our college and in University of Idaho Extension work to help the Gem State keep Idaho's treasured surface and groundwater clean. And we constantly help our citizens use water more wisely as our population grows and as demands increase.

Congratulations to Rick Allen of Kimberly and the Idaho Department of Water Resources for winning a prestigious national innovation award—one of six winners from 700 programs nominated nationwide. Already Rick's system of using satellites to map water consumption at the field level is being used from Oregon to South Africa. **Bill Loftus** provides details starting on page 10. Also see Loftus' story on five UI undergraduates who traveled to El Salvador in March to help farmers there improve water delivery to their crops and hopefully diminish a nearly 50 percent poverty rate in their towns (p. 18).

Vet internships. Marlene Fritz describes an innovative effort to head off a predicted shortage of large animal veterinarians by providing paid internships to Idaho and northwest vet students (p. 26).

Why are some textile and fashion students leaving fashion schools to come to Moscow and study clothing, textiles, and design? You'll find one answer on page 22. **Nancy Payne** describes an innovative program that gave students a real-world challenge—design golf wear for older women. It's this real-world experience that is drawing students to Moscow.

NEXT ISSUE CANCELLED. Due to mounting funding cuts, our college will suspend publication of our usual Summer 2010 issue of *Programs & People*. However, we will continue updates on ways we are serving Idaho and the world through news releases, and we'll add to this current online issue of the magazine as important and interesting stories emerge.

PLEASE FILL OUT THE READER SURVEY yellow card inserted in this magazine to help us determine how to best keep you informed as we navigate these tough financial times. Or you can fill out a similar survey at *http://info.ag.uidaho.edu/magazine/*. Or e-mail me with your thoughts, concerns, or suggestions.

Thanks for your continued support of our college!

MARY ANN REESE, Editor
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photo © MARK LAMOREAUX

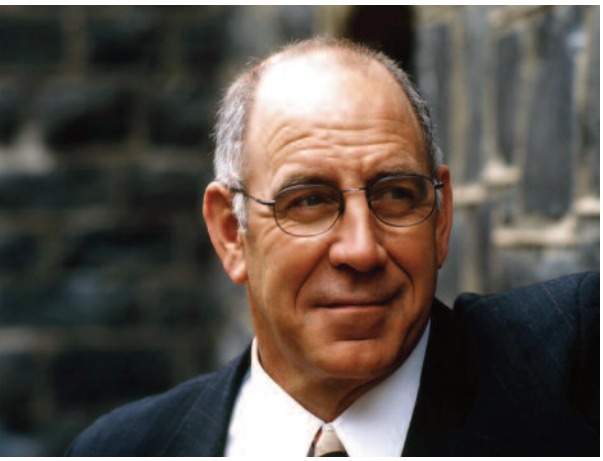
University of Idaho **College of Agricultural & Life Sciences**

Programs & People

FEATURES

IN EVERY ISSUE

Fashions made in India by women who lift themselves out of poverty through their handiwork are Pushpika Freitas' gift to India and the world. The 2009 Margaret Ritchie Distinguished Speaker shared her story on campus in September. Marketplace—*www.MarketPlaceIndia.com*, a non-profit that Freitas founded in Mumbai's slums in the 1980s—helps hundreds of families create a better life.



dean's view

JOHN HAMMEL

17 percent. $4.7 million.

THOSE TWO NUMBERS give shape to the budget cuts we face thus far in the College of Agricultural and Life Sciences. As we turn to 2010, we face cuts to popular programs, cuts that hurt our mission, and cuts we would not make if we had another choice.

When Idaho Legislators met in Boise early in 2009, they and the rest of us were seeing signs of the financial crisis that was to come. My duty then was to warn that if our budget fell to the levels they considered, the college would face restructuring and consolidating two or more research and extension centers and cut deeply into other areas.

Legislators faced the difficult and thankless job of distributing the economic pain based on the best predictions of where state revenues would bottom out.

Then the bottom dropped again. In September, Gov. C. L. "Butch" Otter ordered higher education and many agencies to holdback 6 percent of their FY2010 budgets to compensate for still falling state revenues.

As I write this, the budget remains a major worry. We fully expect to face difficult budgets in the near future. In this respect, we are like land-grant and public universities nationwide that face significant budget shortfalls.

Where does the financial hardship leave us? We are battered but are attempting strategic and tactical restructuring to attain "critical" programming needs. Our students still excel. Our faculty members still prepare students for future careers and conduct basic and applied research that helps Idaho's people.

One comfort from our troubling financial situation is that we saw a strong demonstration throughout the state that the college and its programs are important.

We need to find a way to support the good work our faculty and the college as a whole does. I am proud of our faculty and staff. They work for the college and the university because they want to serve people, and they want to serve Idaho.

The bottom line is that Idaho as a whole must find a way to sustain what it believes to be important. So must we.

bookshelf

FOOD STORAGE ONLINE

Storing Food for Safety and Quality

If you've ever wondered how to best store foods—be they fresh produce, leftovers, emergency food, canned or frozen goods, spices—the University of Idaho Extension in September published a 22-page guide so useful you'll probably want to keep it handy in your kitchen or even tape parts of it on your pantry wall.

Tables with lists alphabetized by food or food product cite optimum storage times and storage locations for fresh foods, cupboard foods, and refrigerator/freezer foods. It also lists optimum temperatures for various food categories, what to do if your power goes out, and it includes a checklist of suggested foods to store for emergencies. Reading this publication makes it clear why writing the purchase date on the product package of almost everything you buy is a good idea.

Authors Sandra M. McCurdy, UI Extension food safety specialist in Moscow, and UI Extension educators Joey Peutz from Canyon County and Grace Wittman from Cassia County, prepared this publication by consulting food storage extension publications from 13 states as well as Web pages from the Food Safety and Inspection Service and Federal Emergency Management Agency.

Find it at *http://info.ag.uidaho.edu/pdf/PNW/PNW0612.pdf*

$3.2 million IGERT grant to fund 24 new UI doctoral students

A successful educational partnership between the University of Idaho and Costa Rica's Tropical Agricultural Research and Higher Education Center to train graduate students on interdisciplinary teams working in two countries will continue with a $3.2 million grant from the National Science Foundation.

The Integrative Graduate Education and Research Traineeship program—IGERT—is the National Science Foundation's flagship interdisciplinary training program. It educates doctoral-level scientists and engineers by building on foundations of expertise in their own disciplines with interdisciplinary training in Idaho and Costa Rica. Such teams are the way real-world projects operate.

The new five-year grant follows an earlier IGERT project funded in 2001 that trained 20 UI doctoral students through research on biodiversity, conservation, and sustainable production in agricultural and forested areas in Idaho and Costa Rica.

The renewal grant will support 24 new doctoral students working in teams including 32 UI professors from four colleges, said Nilsa Bosque-Perez, the UI entomology professor who continues to direct the program. Twelve faculty members from the Costa Rican institute CATIE will also participate.

In addition to Bosque-Perez, University of Idaho professors Sanford Eigenbrode, J. D. Wulfhorst, Jo Ellen Force, Lisette Waits, and Penny Morgan took the lead in developing the project. UI participants come from Colleges of Agricultural and Life Sciences, Natural Resources, Science, and Letters, Arts, and Social Sciences.

"The research and educational experiences we provided were transformational for our original students, and we intend to make it more so for the new crop of fellows," said Bosque-Perez. "Our faculty teams also benefit from the opportunity to work with student teams and with each other in an international setting."

Contact Nilsa Bosque-Perez at *nbosque@uidaho.edu*.

stories by BILL LOFTUS

photo by KELLIE GRANT

Students' healthful frozen yogurt wins national Danisco award

A University of Idaho-Washington State University student team brought home another top prize in the nation's biggest food development competition with a fruit-filled frozen yogurt treat covered in chocolate and granola. Food science departments at the neighboring universities merged in 2008.

The win was the third "top 2" finish for the combined School of Food Science students in the past four years and the second national championship since 2006 for Idaho students. Idaho's Kellie Grant of Rathdrum served as captain for the 2009 Danisco Knowledge Award competition.

Also on the team: Idaho students Dan Ramseyer and Lauren Davis and WSU students Kimberly Court and Elizabeth O'Daffer. Winning entry was Pro-Yo Delectables, designed to be a healthy, dairy-based, frozen novelty providing fiber and healthy probiotics.

"They were a driven group who shared a common desire to succeed," said their adviser Kerry Huber, UI associate professor of food science. "Working seamlessly, they were all involved."

Awards galore for UI's Kellie Grant

The Danisco victory is icing on the cake for Grant's stunning academic career. Named outstanding food science department freshman (2006), sophomore (2007), and junior (2008), she also was 2007 UI College of Agricultural and Life Sciences outstanding sophomore and this spring won the college's Thiessen Outstanding Senior Award.

"Through different opportunities available at the University of Idaho and the College of Agricultural and Life Sciences, I have improved my leadership skills as well as gained valuable experience for my future career," said Grant, now a graduate student at the University of Wisconsin-Madison.

photo by MAXFX @ DREAMSTIME.COM

What discriminating range-fed cows really eat

Uncertain whether their cattle are getting the nutrition they need from range forage, Brad Huff, a UI graduate in 1993 with a B.S. in information systems, and his uncle, Jerry Hoagland, routinely deliver liquid and granular supplements to their private pasture in Owyhee County's Reynolds Creek watershed. "Sometimes the supplements work, sometimes they don't—and if they do work, they don't work every year," Huff says.

Motivated to match supplements to their cattle's needs, they opened their pasture to a University of Idaho Extension team that was looking for a representative site on which to document how much nutrition Great Basin range plants provide—and when.

During 2007 and 2008, UI Extension educators Scott Jensen of Owyhee County, Stephanie Etter of Canyon County, and Rikki Wilson of Gem County, along with former UI Extension beef specialist Jason Ahola, placed four Angus cows—fistulated for access to their rumens—and their calves on the Huff-Hoagland pasture. Every two to four weeks, as the cows moved uphill from cheatgrass to sedges, bluebunch wheatgrass, Idaho fescue, and Great Basin wildrye, the team trailed them closely, taking clippings from forages the cows appeared to be eating and sampling rumen contents for what they had actually eaten.

Findings. While crude protein levels were adequate throughout the growing season, total digestible nutrients—a measure of energy—fell short by late August, dropping 20 percent below recommended levels by season's end. The study also confirmed previous researchers' observations: Individual plants the cows had chosen to eat delivered even more protein—by 1 to 2 percent—than the team's clipped samples.

Clipping late-season samples for protein is still valuable for producers, says Jensen, "but you have to realize that cows can select a little better."

Huff, who is working toward a progressive management-intensive grazing system, predicts that just-right supplementation will be a "huge part" of his success. "There are a lot of opportunities out there to save money."

Contact Scott Jensen at *scottj@uidaho.edu*.

stories this page by MARLENE FRITZ

Beware of homemade dipping oils

With their appetites and curiosity piqued by bread-dipping oils in restaurants and on grocers' shelves, unwary consumers are attempting to replicate the garlic- and herb-infused products in their own kitchens. University of Idaho Extension educators—working with food scientist Drew Dalgetty at the university's Food Technology Center in Caldwell—say that unless you plan to use the dipping oils immediately, that's something you don't want to try at home … yet.

The team is developing recipes that may be the nation's first homemade alternatives to the dangerous practice of simply slipping garlic and/or herbs into olive oils and storing them on the shelf. Team members include UI Extension educators Beverly Healy, Joey Peutz, Barbara Abo, and Grace Wittman; UI Extension food safety specialist Sandra McCurdy; program assistant Alexis Woodbury; and FTC pilot plant manager Josh Bevan.

Deadly botulism risk. While shelf-stored olive oil doesn't pose a food safety threat by itself, adding a low-acid vegetable can create a perfect environment for the production of botulism toxin, says Healy, UI Extension educator in Ada County. Commercial processors are required to use acidifying agents in products they sell, but consumers have been skipping that life-saving step at home.

Instead of complex vacuum tumblers, pressurized systems, and other commercial equipment, Bevan is using basic slicers, dicers, and canning jars to develop his experimental processes for garlic-, basil-, rosemary-, and parsley-infused oils. After he determines how best to prepare the garlic and herbs for acidification in readily available citric acid—and how long to keep them immersed in solution—he'll subject them to storability tests at both room and refrigerated temperatures. The educators' team will evaluate them for appearance, flavor, and aroma.

Once the approved recipes are distributed, Healy says the nation's consumers will be able to make their own safe, healthy, infused oils for breads, pastas, salads, and grilled or roasted meats. Simply delicious!

Contact Drew Dalgetty at *dalgetty@uidaho.edu*.

photo by REED FINDLAY

Beekeeping: How sweet it is!

J. Reed Findlay learned to raise bees from his enterprising grandfather Sam Reed. Now, nearly 500 eastern Idahoans have learned how to raise bees from Findlay, University of Idaho Extension educator in Bannock County.

"When colony collapse disorder hit the national news and I started getting all of these phone calls, I had two options," says the Pocatello-based Findlay. "I could tell them what a little kid who used to grow bees remembered, or I could start keeping bees myself so I could answer their questions."

Using their grandpa's old equipment, Findlay and his twin brother, Russell, chose the latter. They raise about 50 colonies of honeybees and even capture and relocate feral swarms. Eastern Idaho's Master Gardeners and Findlay's bustling beekeeping club—whose members stretch from Bear Lake to Idaho Falls—benefit from his buzz for bees.

Beekeeping club member Stanley Packer, of Preston, launched three hives this spring and will start harvesting honey next year. "It's just so fascinating—all the things those little critters do," he says.

"Bees do the darndest things," agrees Findlay. Intriguing his students most are bees' tightly orchestrated caste system and their colony-based reproduction—the queen mates early in her life with 8 to 20 drones, then releases the sperm on an as-needed basis for the remainder of her days.

Eddie Glines, who calls Findlay's presentation to his Bannock County Master Gardener class "very dynamic," now has one hive for pollinating vegetables and may soon add one for an apple orchard. "I sit on my grass pile and watch the bees," Glines says. "I can see guard bees watching the hives and other bees fanning it to keep it cool and still others going out to collect pollen and bring it back. It's a very interesting culture to watch."

"I hope I planted the seed," says Findlay.

Contact J. Reed Findlay at *rfindlay@uidaho.edu*.

by MARLENE FRITZ

UI helps rural Idaho hospitals fill med tech gaps

When a doctor must treat a critically ill patient, lab results are essential. But in rural areas speedy lab results can be hard to find. Without trained technicians at local hospitals, tests must be sent to and analyzed at remote sites, causing potentially dangerous delays in care.

To fill this gap, the University of Idaho, North Idaho Rural Health Consortium (NIRHC), and Providence Sacred Heart Medical Center in Spokane are training 14 medical technologists each year to help the region's rural hospitals, said Carol Wilson, NIRHC executive director. Two students participate in rotations in rural northern Idaho hospitals.

Guaranteeing Idaho students this training is a $20,000 investment by the university and the consortium of five rural Idaho medical centers to equip two additional laboratory stations for training UI students, said Providence Sacred Heart program director Cynthia Hamby at Spokane.

The consortium includes Bonners Ferry's Boundary Community Hospital, Coeur d'Alene's Kootenai Medical Center, Kellogg's Shoshone Medical Center, Sandpoint's Bonner General Hospital, and St. Maries' Benewah Community Hospital.

"The entire reason we're here is to help doctors quickly make good decisions that can save lives," said Dale Brown, Benewah Community Hospital medical technologist at St. Maries. That facility demonstrates rural needs. Its three medical technologists provide full coverage for the hospital's lab needs, meaning each one must be familiar with a wide range of duties and equipment, unlike in a metropolitan hospital where medical technologists often specialize.

The UI partnered with Spokane's School of Medical Technology "to specifically train future medical technologists to work in rural settings," said Carolyn Hovde Bohach, microbiology professor and UI medical technology degree adviser.

Contact Carolyn Hovde Bohach at *cbohach@uidaho.edu*.

by BILL LOFTUS

What's on your plate today?

LOAD YOUR PLATE DIGITALLY AT NEW INTERACTIVE DIABETES WEB SITE

by MARLENE FRITZ

AFTER KATHY NICHOLS LEARNED SHE HAD DIABETES, she signed up for a class that emphasized "counting this and counting that." The Twin Falls print shop owner called it "so confusing that I was dumbfounded." A grab-and-go eater, she works 11-hour days and urgently needs "ideas to make better choices."

A participant in UI Extension educator Rhea Lanting's The Healthy Diabetes Plate class series, Nichols is just the kind of client for whom Martha Raidl, Boise-based UI Extension nutrition specialist, developed The Healthy Diabetes Plate Web site. Launched this spring at *www.extension.uidaho.edu/diabetesplate*, it tells—but, even more importantly, SHOWS—users how to select foods to help them keep their blood sugar in line. It provides colorful clues to portion sizes—2 cups of vegetables equal two closed women's fists, a 3-ounce serving of chicken equals a deck of cards, ½ cup of fruit equals five large strawberries. Best of all, it offers a meal-planning section in which users can pop properly sized portions of recommended foods onto a graphic of a 9-inch plate. Half of the lunch/dinner plate, for example, is slated for vegetables, a quarter for starch, and another quarter for protein. Most fruit servings are half cups, while dairy is a full cup.

Raidl developed the graphic- and video-rich Web site to show users how easy—and downright entertaining—it can be to plan healthy meals. "I'm hoping it encourages people to include a healthy diet in their lifestyle, whether or not they've been diagnosed with diabetes," she says. By 2011, Raidl anticipates a Spanish-language version.

Read it, hear it, interact with it

Marjorie Rich, Boise-based coordinator of Central District Health Department's Diabetes Prevention and Control Program, contributed to the site's development. "It's so accessible," she says. "You can read it, you can hear it, and you can interact with it."

The Twin Falls-based Lanting—who also teaches UI Extension's Diabetes Pedometer Program—says her students were delighted by the portion-size graphics. "They all had their fists out measuring two cups of vegetables," she says. "They thought that was the best thing ever." They

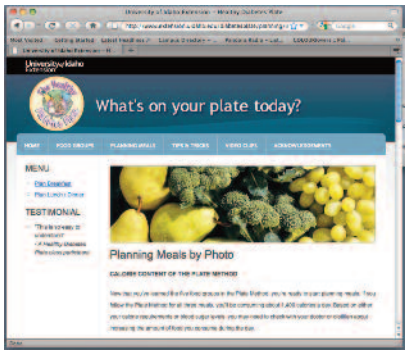
were surprised that green peas and yellow winter squash are high in starch and "had a ball" with the meal-planning pages.

Dr. Craig Holman teams with Lanting and Magic Valley medical professionals to bring South Central Health District's diabetes education clinics—Head to Toe—to rural communities. The Twin Falls podiatrist sees a "steady stream" of diabetic patients daily. Often "completely lost" at initial diagnosis, they need a "very practical, very straightforward way to be aware of what they eat," Holman says, and the Idaho Plate Method on which the Web site is based fills the bill.

Indeed, originating in Sweden and modified by a group of Idaho dietitians in the 1990s, the visual approach to diabetes meal-planning works so well that 85 to 99 percent of Raidl's adult students used it correctly—and that was before she put it online.

"To actually see the amounts of food on the Web site is very powerful, versus just talking about serving sizes," says Joey Peutz, UI Extension educator in Canyon County, who teaches the Idaho Plate Method twice a year. Initially, Peutz's students are worried that healthy eating will leave them hungry, but soon they're pleasantly surprised. "They're not used to seeing a plate that's half full of vegetables, but after we plan a meal and share it, they say, 'I can eat like this. I think this is OK.'"

Short video clips—starring Raidl and three of UI School of Family and



Consumer Sciences (FCS) senior dietetics students—add in-store shopping and home-cooking tips. SeAnne Safaii, Coeur d'Alene-based assistant professor in the UI Coordinated Program in Dietetics, says two of her students—Denise Munson and Sarah Worden—have been inspired to incorporate media work in their careers and all of them will benefit from using the videos in future dietetic consultations.

New to the use of the Internet in educational design and delivery, Raidl historically taught 30-person classes, "but, this way, we have the potential of worldwide impact." Indeed, after she presented the Web site in concept form at International Diabetes Conferences in Prague and Berlin in 2007 and 2008, excited participants told her it was "so easy" they planned to adapt it.

When she rolled it out at the Diabetes Alliance of Idaho's spring 2009 meeting in Boise, Raidl met another goal: Dietitians, nurses, and other medical personnel offered to bring it to their patients' attention.

"It's the basic principles of how to eat correctly when you have diabetes—and, actually, it's the way we should all eat," says Catherine Prinzing, clinical nurse specialist at St. Alphonsus Regional Medical Center in Boise.

"Somebody who is newly diagnosed really does need information," says Mimi Hartman-Cunningham, who heads the Bureau of Community and Environmental Health's Diabetes Prevention and Control Program in Boise, "and this is a great resource."

Nichols, who usually avoids computers after work, says the Web site "might just be something that gets me more interested in using the Internet in the future."

Contact Martha Raidl at *mraidl@uidaho.edu.*
www.extension.uidaho.edu/diabetesplate

Why Use the Healthy Diabetes Plate?

- It's easy: 85-99 percent of adult subjects who tested this method planned their meals correctly.
- It saves time and money by using regular foods. That means less "impulse" buying and fewer trips to the grocery store.
- It makes meals healthy by including all of the five food groups.
- It keeps blood sugar under control by limiting food portions. This minimizes the damage that high blood sugar levels can do to kidneys, nerves, heart, and eyes.
- It's for all family members. You don't have to be a certain age or be diagnosed with diabetes to benefit.

Quenching The Thirst

WHO USES IDAHO WATER AND WHERE?

story by BILL LOFTUS
illustrations by NOAH KROESE

Editor's note: In September 2009, an Idaho Department of Water Resources-University of Idaho partnership won the prestigious national Innovations in American Government Award from Harvard University's Kennedy School Ash Institute for Democratic Governance and Innovation. To see the Idaho program—one of six chosen from 700 nominated nationwide—search YouTube evaportranspiration.

Evapotranspiration (ET)—The sum of evaporation and plant transpiration from the Earth's land surface to atmosphere—or, more simply, water consumption.

WHEN BOISE WATER GURU TONY MORSE searched for the right phrase to describe the importance of water to a panel at Harvard University's John F. Kennedy School of Government, he relied on an old chestnut oft' attributed to Mark Twain: "Whisky's for drinking, and water's for fighting over."

These days, University of Idaho research led by Rick Allen provides an eye in the sky, via the Landsat satellite, to determine not only who bellies up to the bar, but also how much water they draw. It's a technology that may help Idaho lessen traditional water use conflicts, believes Morse. He's the recently-retired Idaho Department of Water Resources (IDWR) geospatial technology section manager.

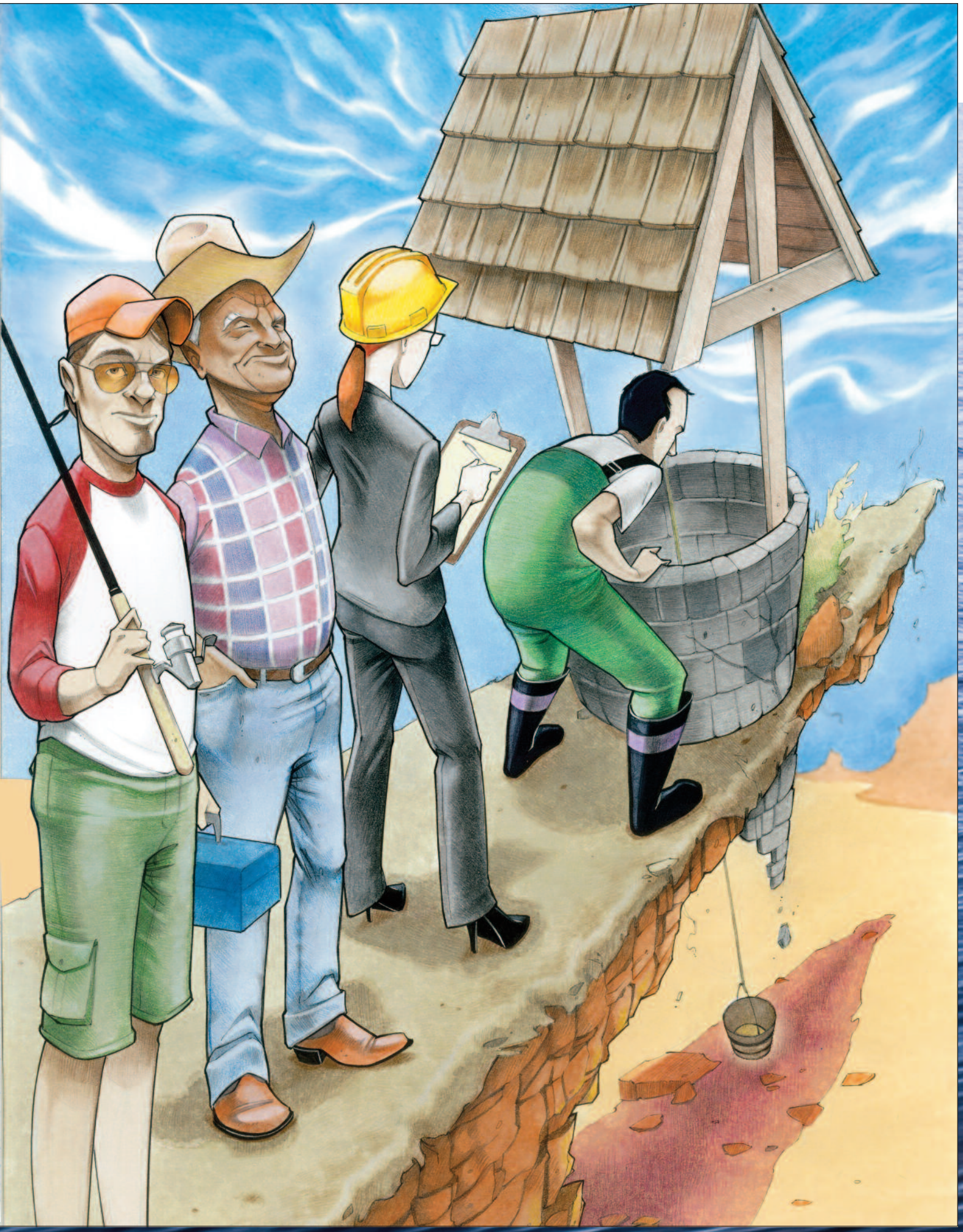
Allen's system is so impressive that in September the IDWR-University of Idaho partnership was one of six programs chosen from 700 nominations nationwide to win the prestigious national Innovations in American Government Award from Harvard. Already the technology is in use throughout the nation and internationally.

Named METRIC—Mapping EvapoTranspiration at high Resolution with Internalized Calibration—it is UI water resources engineer Allen's method of translating satellite imagery into evapotranspiration (ET) measurements to track water consumption down to the level of individual fields. It is there, at the field level, the Idaho Department of Water Resources must administer water rights, a struggle that costs the state millions of dollars in adjudication fees.

You can't manage what you can't measure

That's another mantra IDWR has long repeated. For Allen, using satellite images to monitor water use promises better management of water resources, which means more efficient food production. "One of the most important applications in my mind for satellite-based evapotranspiration is to help sustain some of the global water supply and food production. It is our hope that long term we should see millions, tens of millions, of people with a better food supply," says Allen.

Trying to track who uses water and where has been expensive and difficult. Most monitoring now is done at the county level by monitoring flow in irrigation canals or by monitoring electrical use at individual wells. Satellite monitoring cuts the state's cost to $22 from an average of $119 a year to track electrical costs per well.



Allen, an Idaho native who earned his master's from the University of Idaho in 1977, the year of one of the state's worst droughts, and then his doctorate in 1984, joined the university's faculty in 1998 as a water resources professor in the departments of Biological and Agricultural Engineering and Civil Engineering. His work at Kimberly has earned him international attention. He is co-author of a United Nations Food and Agriculture Organization handbook on using evapotranspiration to compute crop water needs.

Allen developed METRIC to monitor water consumed through ET—water evaporated from soil plus water transpired by plants. The method can effectively address growing regional disputes over water supplies because it is accurate. It can be trusted.

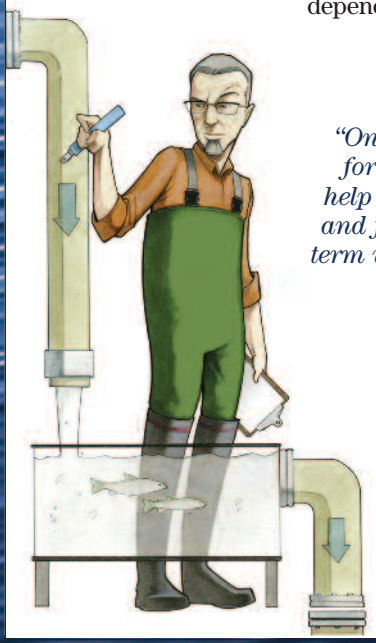
Allen's research at the UI Kimberly Research and Extension Center near Twin Falls underpins the Gem State's efforts. His team is housed in the USDA Agricultural Research Service offices near the university's center, a location that fosters cooperative efforts.

Harvard's Innovations in American Government Award from the Kennedy School's Ash Institute for Democratic Governance and Innovation recognized the Idaho Water Resources Department's efforts as the first agency in the U.S. to develop and use satellite imagery to monitor and enhance public understanding of water usage.

The stakes are high: Some 85 percent of Idaho's water consumption is by agricultural irrigation (see page 17). Drawing on a Dutch model that employed satellite imagery he'd seen used in Turkey, Allen refined it using pioneering work and ET data collected by now retired James L. Wright of the USDA Agricultural Research Service at Kimberly. Early research at Kimberly showed how much water different crops used. Wright's research established alfalfa as the reference standard for estimating water use, helping Allen and others to refine their use of satellite images.

Seven highly trained researchers from around the globe work with Allen at Kimberly to translate the satellite images gained from Landsat to track water use. The satellite functions like a giant camera, recording different wavelengths of light and surface temperatures. Allen's algorithms track the energy balance at the land surface as recorded by the images to assess water use by plants ranging from alfalfa to potatoes to illustrate that these crops operate at peak efficiency with the right amount of water.

How much is the right amount of water?
One might expect the scientist's standard reply: It depends. Mainly, it depends on the kind of crop,



"One of the most important applications … for satellite-based evapotranspiration is to help sustain some of the global water supply and food production. It is our hope that long term we should see millions, tens of millions, of people with a better food supply."

RICHARD ALLEN, University of Idaho water resources engineer, UI Kimberly R&E Center

How agencies beyond Idaho are using METRIC

Rick Allen's METRIC system shows promise in addressing other issues ranging from helping track stream flow restoration projects for fish to settling water disputes before they reach court. Here are examples:

- COLORADO & MOROCCO. Riverside Technology, Inc., uses METRIC to support geographic analysis and mapping of water consumption along the South Platte River of Colorado. In Morocco the company uses it to improve procedures that forecast the amount of irrigation water needed.
- MONTANA supports the use of METRIC for Native American water rights management and has funded applications in the Flathead basin.
- NEBRASKA. The University of Nebraska's Gary Hergert uses the METRIC model to manage groundwater withdrawals from the threatened Ogalla Aquifer. Managers need to know how much pumped groundwater is evaporated (ET) to be able to determine how far out of balance groundwater systems are.
- NEW MEXICO Institute of Mining and Technology uses the METRIC model for computing evapotranspiration from natural vegetation systems along the Rio Grande. And the state's Department of Water Conservation uses results from METRIC to determine water consumption by pecan orchards in New Mexico, upriver from Texas, to be sure water flows to Texas.
- OREGON'S Klamath Basin Rangeland Trust has applied METRIC in the Klamath River Basin to assist in mitigation of impacts of irrigated agriculture on Native American water rights and on Pacific salmon endangerment.
- SOUTH AFRICA'S Council for Scientific and Industrial Research supports METRIC to estimate water consumption by invasive tree species.
- THE U.S. FOREST SERVICE will use METRIC to determine ET from wetland systems sustained by groundwater springs that are at risk due to watering systems that support grazing cattle.
- WYOMING'S state engineer wants METRIC data to support Wyoming's obligations under the Colorado River Compact and the North Platte Compact.

How much water do crops use?

Alfalfa is the reference crop for ET because it is one of the highest water users. Rick Allen's weather-based equations are calibrated to it. In south central Idaho, alfalfa consumes about 1 meter (1000 millimeters) depth of water per acre per growing season. In the Twin Falls area, ET by major crops in millimeters and inches per acre per growing season—from low to high water use—are:

Crop	Millimeters/ water per acre	Inches/ water per acre
Peas, fresh	316	12.4
Snap and dry beans, fresh	335	13
Peas, seed	451	17.75
Snap and dry beans, seed	459	18
Sweet corn, late	525	20.6
Sweet corn, early	547	21.5
Potatoes, cold pack	640	25
Silage corn	661	26
Spring grain, irrigated	666	26
Field corn	704	27.7
Winter grain	757	29.8
Garden vegetables	817	32
Grass pasture, low mgmt.	880	34.6
Sugarbeets	902	35.5
Orchards (apples, cherries)	1,055	41.5
Grass pasture, high mgmt.	1,064	41.8
Grass turf (lawns)	1,082	42.59
Alfalfa hay	1,086	42.75
Grass hay	1,093	43

and each has its own ET signature that was interpreted by Wright's earlier ground-based work at Kimberly.

Rather than trying to identify crops from Landsat's altitude of 400-plus miles, Allen's calculations move beyond that to use wet and dry areas within the image and weather information obtained from the U.S. Bureau of Reclamation's Agrimet system to serve as a "reality check" and to provide model calibration, something lacking from other satellite monitoring systems. Another major advantage of Allen's method is that Landsat images are archived by the USGS so water use can be computed through time for individual areas (see an image example on page 17).

Satellite images enable application over large areas, but with relatively high spatial resolution. Satellites, like digital cameras, record information in pixels. Each pixel equals a 30-by-30 meter square or 900 square meters, nearly a quarter of an acre. Allen's program can calculate how much water is being used in a field by using one pixel as a reference to compare with ground-based weather data.

A method accepted from Oregon to Morocco

Allen's method requires training and a strong foundation of science to accurately estimate water use from the satellite images. To Allen, determining ET with the energy balance coupled with satellite images is a perfect combination of radiation, atmospheric, aerodynamic, and evaporation physics.

"Our method treats everyone the same and with more accurate ET information than we've ever had before, and that has been a big factor in its acceptance," Allen said.

Duane Nellis, new University of Idaho president, especially gets Allen's work. Nellis co-edited the recently released book *The SAGE Handbook of Remote Sensing* with Timothy A. Warner and Giles M. Foody. Nellis served as lead author of the chapter "Remote Sensing of Cropland Agriculture," his specialty as a scientist, with Kevin P. Price and Donald Rundquist.

"As a remote sensing scientist, I am particularly proud of Dr. Allen and his research team, and the national recognition this brings to the university," said Nellis. "The Idaho Department of Water Resources has been an ideal partner in using sound science to serve the public interest."

Idaho Department of Water Resources satellite imagery experts Morse and Bill Kramber at Boise saw the potential in Allen's effort and first partnered with him to work on water monitoring in the Bear Lake watershed of southeastern Idaho in the 1990s. The decade-long, state-university collaboration spread to a variety of applications and uses in the Snake, Salmon, and Boise River basins, leading to the Harvard award.

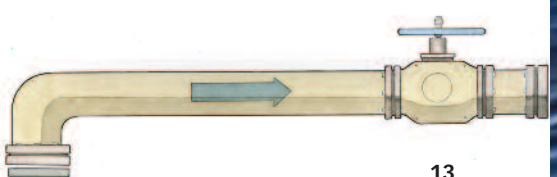
Climate change experts predict Idaho's water supply will undergo a dramatic shift in coming decades away from cold winters that favor accumulation of mountain snows that store water until late spring. Although predictions say southern Idaho may become slightly wetter overall, analysts say more water may fall as rain and flow downstream before peak summer demand, increasing conflicts for available supplies. Allen's method increases the precision of the state's monitoring and—an added benefit—cuts its cost.

Trying to track who uses water and where has been expensive and difficult. Most monitoring now is done at the county level by monitoring flow in irrigation canals or by monitoring electrical use at individual wells. Satellite monitoring cuts the state's cost to $22 from an average of $119 a year to track electrical costs per well.

"Water scarcity is fast becoming one of our nation's most important resource issues," said Stephen Goldsmith, the Kennedy School's Innovations in American Government program director.

"As population and land needs change, mapping evapotranspiration supports more accurate planning and encourages water irrigation conservation. Jurisdictions across the nation can learn from Idaho's model for solving water-resource conflicts and improving water management," Goldsmith said.

Contact Richard G. Allen at *rallen@kimberly.uidaho.edu*.



Idaho water
quick facts

IDAHO IS ONE OF THE MOST WATER-RICH STATES in the country with its multitude of rivers, lakes, and aquifers.

IDAHO IS THE THIRD LARGEST WATER USER in the U.S. consuming **19.5 billion gallons** per day of freshwater. Only California and Texas use more.

IDAHO IS THE NATION'S 4TH LARGEST user of groundwater. Groundwater comprises only **22%** of Idaho's total water use, but nearly **92%** of our drinking water.

DOMESTIC AND COMMERCIAL WATER USE (for homes, restaurants, office buildings) comprises **1.7%** of Idaho's water use. But per capita use is high: Idahoans use nearly **233 gallons** per person per day in homes and businesses. Utah uses more water per capita—244 gallons per day.

IRRIGATION. Due in part to irrigation, Idaho ranks 1st in the nation in the production of potatoes, barley, and commercial trout; 2nd in spearmint; 3rd in sugarbeets, hops, peppermint, and onions.

SOURCE: *http://pubs.usgs.gov/circ/1344*. Also see *Quality Water for Idaho*, CIS 887, updated 2002, *http://www.uiweb.uidaho.edu/wq/wqpubs/cis877.html*

photo by MARK LAMOREAUX

Todd Buxton, a UI doctoral student studying Alaskan salmon, illustrates his science lesson for a Moscow High School sophomore class with photos of chum salmon and their habitat.

Waters of the West:
UI program brings science to high schoolers

by BILL LOFTUS

WHEN UNIVERSITY OF IDAHO STUDENT TODD BUXTON joined Moscow High School biology teacher Mark Shipley at Moscow's Berman Park, their goal was straightforward: Give Palouse area high school students a chance to connect science with the environment.

Buxton, a University of Idaho water resources graduate student, teamed up with Shipley through a new education program led by the University of Idaho's Biological and Agricultural Engineering Prof. Barbara Williams and funded by a $2.94 million K-12 grant from the National Science Foundation.

Lessons along Paradise Creek this fall helped high school students understand how water temperature affects a stream's ability to support fish. "Students got to measure the dissolved oxygen in the water," Williams said. "Then they dug holes to plant trees and shrubs along the creek as part of the Palouse Clearwater Environmental Institute's project to shade the stream to reduce temperatures."

For Buxton, the field trip provided a run through of methodology he will use in Alaskan salmon-spawning streams. For the Moscow High students, it was a fun field trip with a hands-on science experience.

Graduate students learn while teaching high schoolers

The program expands the university's Waters of the West initiative to teach 20 graduate students how to better communicate about science, and it supports teachers and students in seven schools from Lapwai to Potlatch and Garfield, Wash., to Troy.

A month into the project, program manager Paul Allan said the graduate student fellows felt more comfortable in the classroom. "They're getting to know the routines in the classroom, and they're getting better at figuring out lessons that will interest students," he said. "They're saying, 'The kids are there, how can I get them to learn what I want them to learn?'"

What a fish ear bone tells us

Buxton returned from two weeks of fieldwork in Alaska in late September. He used that field experience to help the Moscow High School students learn more about salmon science by bringing to class otolithes or fish ear bones.

Like trees, the fish build up the bones in layers that reflect season and nutrition.

Each fellow encounters different learning and teaching styles in the schools' classrooms, Allan said. Overall, the project benefits both the fellows and the 7th to 12th grade students, and teachers gain. "It provides a good mentorship for the graduate student fellows and an opportunity for the teachers," Allan said. Fellows can provide some real life experiences about how the science is used. Teachers have the background and the teaching knowledge but not necessarily the research experience, which the fellows bring into the classroom.

The ultimate goal is to produce scientists who can better help the public understand science.

"We're not trying to create K-12 teachers," Allan said. "We're trying to broaden the experience available to graduate students to create better science communicators, and college instructors, and researchers who can speak across disciplinary divisions."

Learn more about the university's Waters of the West program at *http://www.cals.uidaho.edu/bae/WOW.html*.

Contact Barbara Williams at *barbwill@uidaho.edu*.

Water use in Idaho's high desert: Even cheatgrass and sagebrush are players

by MARLENE FRITZ

With sagebrush shrublands comprising nearly 40 percent of Idaho acreage, no valid climate-change study could ignore the impacts of desert flora on aquifer recharge. While water moves through desert soils in small, sporadic amounts, "It's a chunk of change when you multiply it by millions of acres," says water resources engineer Rick Allen at the University of Idaho's Kimberly Research and Extension Center. He estimates that it's at least 10 percent of the total water budget for the Snake River Plain aquifer—and it's likely to increase with cheatgrass encroachment.

photo courtesy INVASIVESPECIES.ORG

With plant ecologist Matt Germino of Idaho State University, microbial ecologist Kevin Feris, civil engineer Venkat Sridhar of Boise State University, and UI postdoctoral micrometeorologist Wenguang Zhao, Allen is using scintillometers to shoot infrared beams across two 2-mile study areas near Hollister and Twin Falls—one predominantly cheatgrass and the other predominantly sagebrush. The goal is to measure the amount of heat rising from their surfaces. A third experimental area in this National Science Foundation-funded research is a forested parcel near Island Park.

Climate change, wildfires may favor cheatgrass

A series of complex equations then produces a tally of energy used to evaporate water beneath each scintillometer beam and of water returning beyond plant root zones to the aquifer. Allen will compare the results with an older method that focuses more locally on eddies of air and is less accurate in sparse vegetation systems. Then, he'll put the scintillation data to work in his satellite-image based process, METRIC, which produces water-consumption data that drives hydrologic models of the Snake River Plain.

Allen suspects climate changes that bring more rainfall early in the season would favor the relatively shallow-rooted, early germinating annual cheatgrass over the far more deeply rooted perennial sagebrush. So would wildfires: After burns, rapidly germinating cheatgrass forms a dense, thirsty lawn that inhibits reseeding by sagebrush, Germino says.

The team wants to know how much and when the two distinctive species use water so its members can project changes in recharge based on changing plant populations. They'll measure soil moisture and even soil microbes, because microbial populations are known to influence how water flows through soils. In addition, Germino will literally heat up the plant communities with overhead plastic glazing that simulates the greenhouse effect.

If there's a burn within a feasible distance, the team even plans to relocate a scintillometer over it to measure water use as vegetation transitions.

"It's pretty exciting to learn the physics associated with how scintillometers work," says Allen. The optical theory underlying their use originated in telescope observatories.

Contact Rick Allen at *rallen@kimberly.uidaho.edu*.

12 TWELVE TIPS

for cutting water usage in **YOUR** landscape

by MARLENE FRITZ

IN IDAHO, about two-thirds of residential water bills are run up on landscapes, whether they need it not, says Tony McCammon, University of Idaho Extension educator in Payette County. Homeowners typically pour on 50 to 80 inches each growing season—more than twice the amount their grass requires. Imperfectly designed, improperly maintained, or inefficient irrigation systems—plus water running off slopes—explain some of the excess. But most commonly, Idaho homeowners waste water by simply irrigating more often than their landscapes need.

"When a dry spot shows up in your lawn, what's the first thing you do?" asks McCammon. Rather than adjusting or repairing sprinkler systems or improving compacted soils with compost or humus, most homeowners just amp up irrigation to their entire landscape. "Sadly," says McCammon, "that means the rest of the landscape gets overwatered."

Applying less water in the cooler spring and fall months than in peak summer heat can cut your water use in half, McCammon says. Turning automatic sprinklers off during rainstorms or adding a water shutoff device to your system can save gallons as well. Most important, however, is matching your sprinkler applications to your plants' needs, which means first measuring how much water your system is really applying. To do that, gather a few empty soup cans, a ruler, and a watch, and follow instructions in University of Idaho Extension publications *Watering Home Lawns: How Much and How Often* or *Watering Home Lawns and Landscapes,* free at *info.ag.uidaho.edu*.

"If we could change just a few of our habits, we could save a lot of water," says McCammon. "Each unnecessary irrigation is the equivalent of 104 showers, 52 baths, 52 loads of laundry, or 312 toilet flushes."

"Each unnecessary irrigation is the equivalent of 104 showers, 52 baths, 52 loads of laundry, or 312 toilet flushes."

TONY MCCAMMON
UI Extension, Payette County

Water-saving tips from University of Idaho Extension faculty:

WISE PLANT SELECTION

1 **Select water-efficient, drought-tolerant ornamentals** from lists available at *www.extension.uidaho.edu/idahogardens* or your local UI Extension office. Group plants according to their needs for both water and sunlight, says Susan Bell, UI Extension educator for Ada County, and set your irrigation system to differentially supply high- and low-water zones.

2 **Go native**. Consider pensteмons, native buckwheats, columbine, hyssops, daisies, blanketflower, sumac, and even roses for stunning flower beds that may need watering only four to eight times all summer, advises Steve Love, UI Extension horticulture specialist at the UI Aberdeen Research and Extension Center.

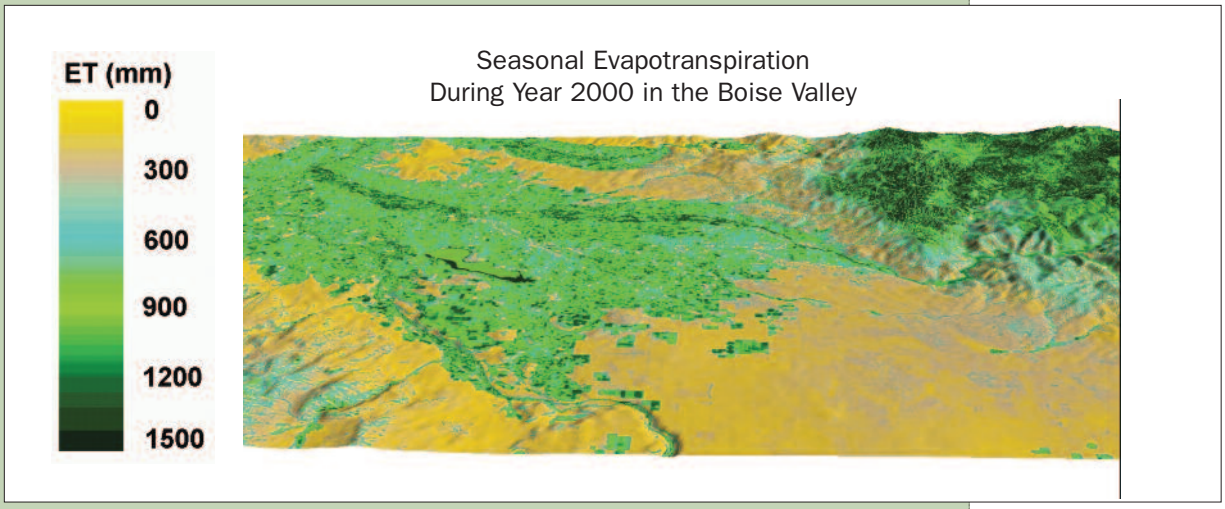
TURF CONSIDERATIONS

3 **Avoid installing** narrow, impractical strips of grass that serve no landscape purpose. Know for which benefits you're growing turf—play areas, erosion control, natural cooling, and so forth—and plant only what you need and what you can adequately maintain, says Tom Salaiz, research support scientist and turf researcher at Aberdeen.

4 **Maintaining your turf's fertility** will help it develop the deep, healthy root system it needs to resist drought, Salaiz adds.

5 **Try tall fescues**. If you're already managing your grass optimally, you can further reduce water needs by growing drought-tolerant turfs. Consider turf-type tall fescues, says UI Extension educator Jo Ann Robbins in Jerome County. UI Extension research conducted between 2003 and 2008 in Jerome found that deep-rooted tall fescues can look good with just 40 percent of the normally recommended water. And, although it was still straw-colored in March, tall fescue that had

continued on page 21



Seasonal Evapotranspiration
During Year 2000 in the Boise Valley

How much is Boise Basin's water worth?

New model seeks win-win scenarios

by MARLENE FRITZ

PREPARING FOR THE POSSIBLE EFFECTS of climate change, a group of University of Idaho researchers is developing a multidisciplinary modeling tool to help water managers and policymakers optimize Boise Basin water use by balancing water demand with supply.

Teaming with research hydrologist Bryce Contor and water resources research analyst R. D. Schmidt of the Idaho Water Resources Research Institute, CALS agricultural economist Garth Taylor developed a calculator that projects farmers' demands for water based on its price. The team's "spatial water allocation model"—slated for completion by 2012—will be fully integrated, allowing users to evaluate conservation, regulation, and market-based water trading as strategies for redistributing a scarce resource.

While there's not an open market for water in Idaho, water banks and irrigation companies trade it, water companies procure it, and fiercely competing interests swamp courtrooms, says Taylor. "We've got to have some voluntary mechanisms so both parties are better off. That's how markets work."

For example, if Farmer A grows a thirsty, low-value crop and Farmer B grows a more drought-tolerant, high-value crop, at what price would a water right sale from Farmer A to Farmer B be a win-win solution?

Or, if—as these researchers have already determined—prodigious amounts of seepage from unlined irrigation canals raises the valley's water tables by 20 feet, thereby benefiting other water users, what are the overall costs and benefits of lining canals? Or, if the risk of spring flooding surges with climate change, how should the economic effects of drawing down reservoirs to curtail that risk be balanced with those of holding water back to ensure farmers a late-season supply?

In building the new model, Schmidt—previously with research partner U.S. Bureau of Reclamation—and Contor are extending a current Boise Basin conjunctive groundwater model to include river and reservoir operations as well as calculations of price-based agricultural water demand.

While engineers look for engineering solutions and economists look for economic solutions, Schmidt says there's "an enormous advantage in looking at problems that combine the two. Once you do that, you start to see some new approaches to water management."

One early surprise, says Contor: "When we ran the current model through various scenarios, climate change had less effect on demand for irrigation water than the kinds of one- or two-year commodity price changes that we've seen in recent years." As crop prices ebb and flow, so does farmers' willingness to pay for water.

Contact Garth Taylor at *gtaylor@uidaho.edu*.

Water quantity: what Idaho can do

AGRICULTURE IS IDAHO'S LARGEST INDUSTRY AND ITS LARGEST WATER USER—**85%** of Idaho's total water use and about **13%** of the nation's total agricultural withdrawals. Only California and Texas use more water for agriculture.

FLOOD IRRIGATION practiced on **1.2 million** of Idaho's **3.5 million** irrigated acres could be replaced by modern sprinkler irrigation. New water management strategies to save water include surge and trickle systems.

FARMERS CAN SAVE WATER by closely **monitoring soil moisture** and irrigating only when the crop is in need.

LINING IRRIGATION CANALS CAN SAVE QUANTITIES OF WATER, but this practice can dry up artificial wetlands created by **leaky canals**, destroying important waterfowl habitat and will stop replenishing aquifers.

SOURCE: *http://pubs.usgs.gov/circ/1344*. Also see *Quality Water for Idaho*, CIS 887, updated 2002, *http://www.uiweb.uidaho.edu/wq/wqpubs/cis877.html*

RainMakers

El Salvador farmers benefit from help of UI students, faculty

story by BILL LOFTUS photos by BRAD BECKMAN

UNIVERSITY OF IDAHO UNDERGRADUATES and three faculty/researchers in 2009 worked alongside rural El Salvador farmers launching a 2-year plan to improve their irrigation systems and water management for vegetable production—an effort to combat a nearly 50 percent poverty rate.

Funded by the Millennium Challenge Corp.—a U.S. government agency whose goal is to reduce poverty worldwide—the Idaho challenge is to improve five existing irrigation delivery systems and create five new ones serving some 200 farmers and 1,000 residents.

On hilly fields of clay and eroded soils, farmers work an average of 3 acres each to produce food for their own use and for sale. They rely on streams for rain-fed irrigation systems. Under the leadership of university water quality engineers Jan Boll and Erin Brooks and rural sociologist J. D. Wulfhorst, the faculty and student team collaborates with El Salvador farmers who depend on cooperative irrigation systems to preserve more water for use during droughts and to make water use more efficient and fair.

Leading the project is CATIE, the Costa Rica tropical agricultural institute that has a close working relationship with the University of Idaho. It has staff working in El Salvador with the farmers on day-to-day system improvement.

Combating stolen sprinkers, broken pipes

Five University of Idaho undergraduates visited the Metapan and La Palma areas of El Salvador in March 2009 talking to farmers, walking irrigation routes, and analyzing needs and potential risks for a low-cost, efficient water delivery system.

Student team members include Kara Eby of Bonners Ferry, Angelina Cernick of Cle Elum, Wash., Alexander Edstrom from Oakland, Calif., Boise's Steve Schneider, and Manuel Diaz-Gonzalez, a Puerto Rican native who at age 23 already has experience developing irrigation systems. Their March trip was part of their senior capstone project, which they named Idaho International Irrigators.

"The pipeline had not yet been buried, so we were able to walk the line to perform a visual inspection," says the students' final report. They learned that sprinkler heads from night-operating farms had been stolen. To protect replacement sprinkler heads, farmers switched to daytime irrigating, excessively loading the system. Pipeline that had not yet been buried suffered breakage. Steps to prevent those problems include using galvanized steel sections to protect pipe crossing under roads. Also, some farmers built enclosures to protect pipes.

Weather stations provided through the project will help determine how much irrigation water is available. Other sensors will aid its fair and timely distribution.

Because the irrigation water depends on rainfall, the water supply needs to reserve water supplies for a 6-month dry season. During the rainy season, a dry spell as short as two weeks also can have severe impacts on the farmers' crops.

What students learned in El Salvador

The student experience was an added benefit of the Millennium Challenge project. To recruit students, Boll told them, "This is a good opportunity, even though it is at a

University of Idaho students traveled to El Salvador in March 2009 to help farmers struggling with water delivery systems for their small gardens.The student team includes, from left above, Alexander Edstrom, Kara Eby, Angelina Cernick, Steve Schneider, and Manuel Diaz-Gonzalez. At top left, students conduct a flow test to determine the amount of water moving through the streambed. Vincente Romero, Sr., in straw hat, grows potatoes and cabbage near the Honduras border. He is much respected. If he buys in to the new irrigation system, other farmers are likely to follow. So far he is impressed. The cabbage made delicious soup at a local San Ignacio café.

great distance, to engineer a system that fits the culture and economics of the people." Future UI student teams may tackle new phases of the project.

Visiting El Salvador brought home the reality of the team's classroom work back in Moscow for Cernick. "Until we had a chance to see the design on the landscape, it was hard to envision adjustments that might be needed." Schneider, the mechanical engineering major on the team, agreed. "Seeing the numbers we estimated actually occurring in the field is the culmination of engineering training."

Student efforts also reflect the overall project goals: tailoring the farmers' irrigation systems to their needs and their environment.

"We don't want to take the whole stream because that would affect the ecology downstream and farmers downstream. We want to figure how much water we actually have and what fraction we can take of that," said team manager Eby, pursuing graduate studies in environmental engineering after graduating from biological and the UI Department of Biological and Agricultural Engineering with an environmental science focus.

"I became interested in the El Salvador irrigation system because of its unique sense of service," Eby said. "As an American citizen, I take for granted the many comforts of daily life. By designing an irrigation system for the residents of El Salvador, I was able to use my knowledge and skills to improve the standard of living for others."

The 2009 team won two "best presentation" awards at the university's May 1 Engineering Design EXPO, the Pacific Northwest's largest interdisciplinary showcase for engineering and technological innovation (*http://www.engr.uidaho.edu/expo/2009/*). See additional El Salvador project details at *http://seniordesign.engr.uidaho.edu/2008_2009/icubed/index.html*.

Contact Jan Boll at *jboll@uidaho.edu*.

See a video of this project at *www.info.ag.uidaho.edu/magazine/winter10*.

"As an American citizen, I take for granted the many comforts of daily life. By designing an irrigation system for the residents of El Salvador, I was able to use my knowledge and skills to improve the standard of living for others."

KARA EBY, Graduate Student Environmental Engineering

Steve Schneider, a U.S. Navy veteran majoring in mechanical engineering, shows El Salvador girl how to lock the sprinkler head so he could conduct soil moisture monitoring without getting drenched by the rotating sprinkler.

continued from page 16

been fertilized with nitrogen three times during the previous year greened up at least as well as Kentucky bluegrass by April in trials conducted by Robbins and UI Extension irrigation specialist Howard Neibling. Proper fertilization in early May, late June/early July, and early/mid September also minimized weed growth.

6 **Clay soil help**. To improve infiltration on clay soils, core aerate in spring and fall and top dress with a quarter-inch of finished compost.

7 **3-inch mow height.** Raise mowing heights to 3 inches during the summer. Taller blades will help your grass produce deeper, healthier roots, and your expanded soil-water reserve will permit longer intervals between irrigations. Taller blades also shade the ground, reducing water use.

IRRIGATION/WATERING CONSIDERATIONS

8 **Efficient system.** Make sure your irrigation system works efficiently and delivers water to the right places and in the right amounts. Remember that grass doesn't waste water; people do.

9 **Water deeply**—at least 12 inches for grass—and infrequently, says Bell.

10 **Dusk to dawn.** To minimize sun-, wind-, and heat-related water loss, irrigate between dusk and dawn.

11 **Green only.** Water only your lawn and garden beds—not sidewalks, driveways, decks, street gutters, etc.

12 **"Smart" controllers.** Consider "smart" irrigation system controllers. They use climate information or soil moisture to determine if your lawn needs irrigating.

Contact Tony McCammon at *tonym@uidaho.edu*.

Water quality: What Idaho can do

Major players in preserving and enhancing Idaho's water quality include mining, timber, other industries, agriculture, and urban centers.

TIMBER/MINING

Major threats from logging are erosion and stream sedimentation caused by improper road building and by transporting trees from the forest to the road. Sedimentation degrades habitat for fish and interferes with river navigation.

Timber harvests should be carefully planned to consider slope, soil stability, and distance from streams and lakes.

Mining and industrial activities can degrade water quality by polluting waterways with heavy metals and toxic chemicals. For example, the South Fork of the Coeur d'Alene River today is limited to industrial use because of high concentrations of lead, zinc, arsenic, and cadmium from past mining.

AGRICULTURE

Farmers and ranchers can protect water quality by using best management practices (BMPs) and following pesticide labels.

Water quality can be affected by overgrazing in riparian areas. Management strategies include reducing the number of livestock in riparian areas, fencing off areas for rehabilitation, and allowing riparian grazing only during seasons least sensitive to damage.

HOMEOWNERS

Households can degrade water supplies by improperly disposing of common chemicals used around the home, workshop, and garage. Furniture polish, antifreeze, lawn and garden pesticides, and paint thinners are a few of the chemicals that impair water supplies if poured down sinks or dumped in land fills.

Faulty septic systems can expose water supplies to harmful bacteria.

Lawns and gardens improperly treated with fertilizers and pesticides can contaminate water supplies through erosion, runoff, and leaching.

CITIES/COMMUNITIES

Erosion and sedimentation can be minimized through careful road building, low-impact log removal, and preservation of uncut "buffer zones" around riparian areas.

Riparian areas (streamsides and shorelines) and wetlands are important for preserving water quality because their vegetation filters out sediment and debris that otherwise would enter the water.

Source: *Quality Water for Idaho*, CIS 887, updated 2002, *http://www.uiweb.uidaho.edu/wq/wqpubs/cis877.html*

Real world designs guide new UI textile direction

by NANCY PAYNE

MULTI-MILLION DOLLAR GRANTS may be standard change-makers in university programs, but a modest $10,000 grant awarded last fall to the University of Idaho's May Chae helped demonstrate a new direction for the Margaret Ritchie School of Family and Consumer Sciences' Clothing, Textiles, and Design (CTD) major.

Enrollment in the clothing, textiles, and design option has doubled to 75 students in the last five years, says Sandra Evenson, school interim director and former CTD professor. Increasingly the option attracts students who "are aware of labor and environmental issues. and are interested in making a difference—not just making money." Faculty members Chae, Susan Torntore, and Lori Wahl have shifted their primary focus from construction and fitting to product development—including industry costs, ethics, labor, and marketing issues.

Cotton, Inc., whose global offices include ones in New York and North Carolina, offered the grant to encourage the use of cotton fabric in apparel design. Chae made the grant an opportunity to implement a course in product development accompanied by scholarships for top designers.

Challenge: Stylish golf clothes for women in Clarkston, Wash.

Believing that older women face clothing issues lacking attention, Chae recruited six "mature" female golfers from Clarkston, Wash., as a focus group and eventually as models for the class project. The models answered questions about golf-apparel needs while students divided into 3-person teams to design garments meeting the challenge.

At first both students and models were intimidated by the project. Models didn't always understand the technical language of garment design, and students hadn't worked with older women whose fashion sense differed considerably from their own.

But it didn't take long for them to appreciate each other. After focus-group interviews, teams brainstormed ideas and formulated an outfit for each model.

"I learned a lot about catering to specific groups and how that is essential when marketing a new product," recalls Marcie Meredith, Boise, one member of the winning design team. She earned her B.S. degree in clothing, textiles, and design in May 2009.

Teammate Alex BeDell, a senior from LaCrosse, Wash., found learning to work as a team invaluable. Not only did students learn each other's work styles, but they also gained insight into the project through the models' input. "It was a very professional class project," summarized BeDell.

The third teammate, Jesse Johnson, a senior from

Winning team for best design and marketability were students (from left) Alex BeDell, Jesse Johnson, and Marcie Meredith. Model Elva Osborne is one of six Clarkston, Wash., women who helped students understand their needs for better golf clothes. Photos by UI Photographic Services

photo © DARIOEBIT@DREAMSTIME.COM

Fruitland, considered this class "one of the most important things I have done in college … in terms of preparing myself to enter the workplace." Beyond being assigned a target market, "we were on our own. We came up with original designs, figured out dimensions, drafted our own patterns, and constructed the garment ourselves. We kind of felt like our final garments were our babies, after we had worked so hard on them for so long."

The models traveled to Moscow monthly and were impressed as team skills grew. Students on one team had limited sewing experience. "I was real proud of how that team divided tasks and learned skills they needed to produce my outfit," said Sharon Vahlkamp. Julie Jacobs enjoyed the process so much, "I wish I were young and in college again!"

Lori Wahl, a '93 FCS alum and current UI instructor, then taught the class to create storyboards in Adobe Illustrator to sell a manufacturer on their ideas. E-mail, she said, is the cheapest and fastest way to communicate in an era when most garment factories are no longer based in the U.S.

Preparing for a global marketplace

Global aspects of today's fashion industry create the need for students to gain cultural competencies (including working with older women) as well as technological skills. Faculty member Torntore brings that perspective to all her courses. Today's CTD students not only must solve design, marketing, and retail problems, but they also need to understand fair trade, corporate responsibility, and green trends affecting both the environment and human needs.

The University of Idaho's new CTD direction is drawing students from all over the country. A junior from the Fashion Institute of Technology in New York recently transferred to Moscow because she thought the broader program here will better prepare her for the fashion industry. "We are moving in the direction we want to go. We have faculty who want to work here. We are doing what we are supposed to be doing, and will keep doing it," promises Evenson.

That small $10,000 grant opened the eyes of one class to the real world of determining and then meeting customer needs. A total $3,000 went to scholarships, including $500 each to winning team's Meredith, BeDell, and Johnson.

Another reward was smiles on the golfers' faces as they modeled their sportswear on the final day of class—another proof that May Chae's efforts succeeded.

Contact Sandra Evenson at *sevenson@uidaho.edu*.

Student suggestions for cotton manufacturers

Throughout this activity, students became familiar with benefits of cotton in providing breathable and comfortable golf wear for the target market. However, they found that a lack of availability of cotton blends and limited prints and colors to choose from were the biggest obstacles to overcome.

Students became discouraged about the use of cotton because they could find synthetics in all sorts of pretty colors and prints that had fluidity and draped beautifully. In the end, one group was reduced to using quilting cotton, and their garments had a homemade look that they were trying to avoid.

Students researched Cotton Inc., and were very impressed with the three new finishes that are being developed. They believe that the cotton stretch, wicking windows, and endure technology, a finish that increases durability and wrinkle resistance, will solve many of the objections to using cotton in the future. But again, if these fabrics are to be made available to the public, "we need more fashion-forward choices in colors, prints, and blends," says May Chae.

What older women golfers want to wear

IT IS CLEAR FROM FOCUS GROUP INTERVIEWS that our participants don't think form-fitting garments currently created for younger people are flattering to figures of the over-50 female athlete. There is also dissatisfaction with lengths that are too short and a lack of variety in styles. Pockets are too small.

Major needs for mature female golfers include:

Functional needs—free movement for arms and shoulders, greater comfort, appropriate sizing, protection from sun, flexibility, and wearability.

Expressive needs—for a flattering garment that allows the golfer to feel good about herself and have confidence.

And

Aesthetic needs—bright colors such as red, yellow, blue, and lime green; a combination of feminine and athletic features and unique styles.

Mature female golfers want collars and sleeves to fit comfortably. They prefer coordinated colors and matching outfits that include skorts/pants and a shirt with pockets deep enough to carry golf tees and ball markers.

LILA NOLAND

ELVA OSBORNE

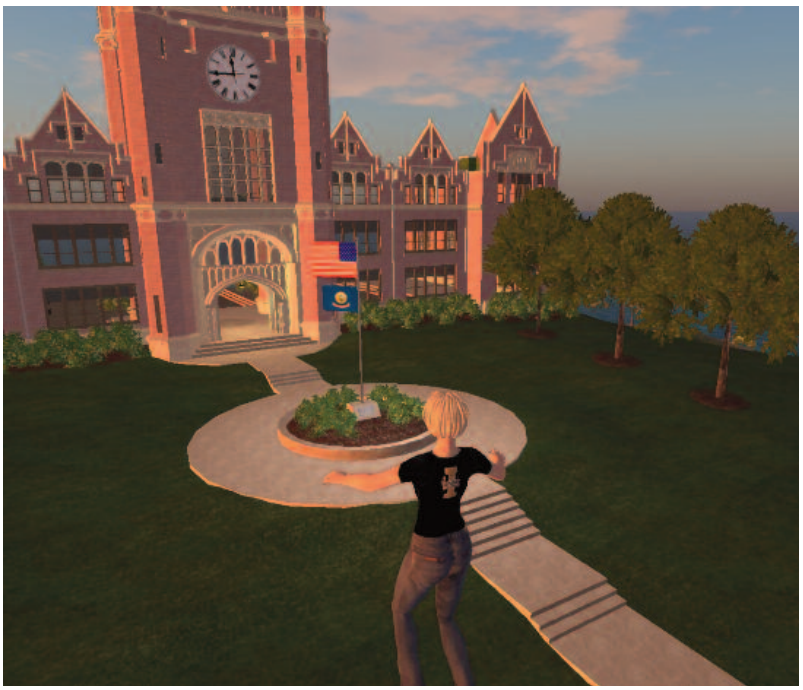
JULIE JACOBS

Student awards

On the final presentation day, $3,000 in scholarships went to these students:

Best design and marketability (p. 22), $500 each to Alex BeDell, Jesse Johnson, and Marcie Meredith. Model was Elva Osborne. **Best technical proficiency** (center), $300 each to Vanessa Casad, Mary Clements, and Kelsey Otter. Model was Diane Mitchell. **Best team work** (top photo), $200 each to Solvae Gulbranson, Sarah Pietruszka, and Niccole Kinch. Model was Sharon Vahlkamp.

—Text at left is excerpted from "Prototype Development of Golf Wear for Mature Female Golfers" by May Chae



UI Virtual Campus to benefit students, faculty

THE UNIVERSITY OF IDAHO HAS A BRAND NEW CAMPUS—a virtual one complete with the beloved red brick administration building, classrooms, a cinema, a runway for fashion shows, and even virtual people wearing Vandal pride t-shirts.

Built two years ago on a Web site owned by Second Life, the UI virtual campus—called Idahonia—allows students, faculty, and community members from throughout the state and around the world to meet, watch videos together, and share discussions in real time.

"Today's students want truly interactive learning where they can be mobile, yet interact with their classmates and industry professionals in remote locations," says university Family and Consumer Sciences (FCS) alum Lori Wahl '93, who teaches online FCS classes on how to use Adobe Illustrator to design fashions plus a course on the evaluation of apparel and textiles. Wahl uses Second Life to view videos and images with students and host live discussions. She also connects with students living miles away via her regular virtual "office hours."

Wahl, Brian Cleveley, College of Art and Architecture, and K. D. Dial, College of Business and Economics, are expanding the virtual campus thanks to a $186,700 State Board of Education technology grant.

In an era of struggling economies, Second Life provides one more option for UI faculty teaching online courses and students learning via the computer. "The impact of this is immense," believes Cleveley. "We have an abundance of rural areas in our state, and this provides opportunities to expand education without the costs of new facilities." In addition to teaching their own courses, the trio will use the grant to offer training to other university and UI Extension faculty.

Idahonia is open to the public. Visitors must set up a free Second Life account, download and install software, complete training that Second Life offers, and then anyone can teleport to Idahonia.
Start at *http://www.sl.uidaho.edu*.

Idaho vet internship is a "chance to be around 4,000-plus cows for six weeks straight and to learn to make split-second decisions in a completely non-sterile environment. It's thinking on your toes."

KATRINA CHEW, WSU 2nd year vet student

story by MARLENE FRITZ
photos by BRAD BECKMAN

UPSIZING

VET STUDENT CAREERS

Idaho veterinarian internships help Idaho dairies and expand student visions beyond small-animal practice

SHE GREW UP JUST BEYOND THE CALDWELL CITY LIMITS with the usual dogs and cats. Today, as a third year veterinary student at Washington State University and a participant in the Washington-Idaho Regional Veterinary Medical Education Program, Betsy Adams finds herself positively charmed by dairy cows. "They're fascinating," she says. "They're working animals that are out doing stuff, and it takes a lot of talent and effort to manage them. The whole complexity of it all fascinates me."

Now planning a career in large-animal medicine, Adams was immersed in that "whole complexity" while serving as an intern in the two-year-old Idaho Bovine Veterinary Experience Program. Interns in IBVEP—initiated in 2008 by University of Idaho Animal and Veterinary Sciences' faculty Chris Schneider of Moscow and M. Wayne Ayers of Caldwell, both veterinarians—have nearly quadrupled already and may help inoculate Idaho from projected veterinary shortages threatening its dairy and beef industries.

Interns make $2,500, get hands-on mentoring

For six weeks in summer 2008, Adams learned each step in the day-to-day management of Kuna's Toledo Dairy and—like all IBVEP interns—she was paid a much appreciated $2,500 to do it. Returning in summer 2009, she examined large-animal vet practices from a different angle. She "shadowed" veterinarians Andy Borrowman and Garth Millard of Vet Logic, Inc., on their dairy rounds.

"You don't get this kind of experience in school," says Adams. "You hear about it, but out here you go out and do it, which helps you learn it a lot better."

Schneider, a native of Coeur d'Alene, whose youthful image of dairying hadn't evolved much past Bossie, recalls a "pivotal moment" in his WSU veterinary education: a visit to Si-Ellen Farms in Jerome, which now milks 6,000 cows. When it came time to select progressive, respected, award-winning mentors for his IBVEP students, Si-Ellen's Mike Roth came immediately to Schneider's mind.

"It's a win-win," says Roth. "It helps the university, and it helps dairy farmers. We're concerned about having enough large-animal veterinarians in the future, and it's just so neat to see these kids who are so intelligent,

A dairy cow suffering from toxic mastitis becomes a teachable moment for WSU vet intern Katrina Chew with M. Wayne Ayers, DVM, teaching faculty at the University of Idaho Caine Veterinary Teaching Center in Caldwell. They're at Dale VanEs Dairy in Marsing.

… the veterinary profession anticipates future shortages of 5 to 10 percent in food-animal veterinarians and 25 percent in mixed-animal practitioners, potentially leaving Western livestock producers high and dry without experienced veterinarians to guide them in herd reproduction [and health] issues.

CHRIS SCHNEIDER, faculty,
UI CALS Animal and Veterinary Sciences

energetic, and enthusiastic. They're the best of the best, and we get to keep them in agriculture."

IBVEP student Gus Carreon, originally of the rural Marsing area, was assigned to Nampa's Stewart Farms in 2008 and shadowed Herd Health veterinarian Rob Dey in 2009. "It really motivated me towards dairy veterinary medicine," says Carreon, a UI College of Agricultural and Life Sciences animal science graduate who began veterinary school at WSU this fall. "I got a very good idea of the management aspects, and I really enjoyed going from dairy to dairy, learning the different protocols and management styles." Best of all: watching the dairy vets interact with everyone on the dairy.

"We can't let all of our good students end up in small-animal clinics," says dairyman mentor Joe Stewart. "I wanted to provide the students with this opportunity because we need veterinarians that we can rely on in the future."

Heading off predicted vet shortages: 80 percent of vet students are women

According to Schneider, the veterinary profession anticipates future shortages of 5 to 10 percent in food-animal veterinarians and 25 percent in mixed-animal practitioners, potentially leaving Western livestock producers high and dry without experienced veterinarians to guide them in herd reproduction issues, advise them in production-limiting diseases, or help them ensure their herds' optimal health.

Schneider wants today's veterinary students—80 percent of whom are urban or suburban females—to realize both the potential financial and professional rewards of becoming food-animal veterinarians. With six-figure salaries, they would work within complex animal-management systems to keep entire herds healthy, rather than performing "fire-engine medicine" that focuses on the sick. Their days might start at 6 a.m., and they might not always watch the rain from the dry side of the window, but they would likely watch their children play soccer by late afternoon. And their clients, says Schneider, would be "some of the best people you can work with."

15 interns aid 11 PNW big dairies, beef producers; more to join in

Schneider and Ayers so far have placed students on seven dairies and four feedlot or beef operations—including UI CALS' Nancy M. Cummings Research, Extension, and Education Center. Most mentors are in Idaho, with a few in Oregon and Washington. Interns have also been assigned to eight veterinary practices—representing 21 veterinarians—and to UI CALS' Caine Veterinary Teaching Center.

Student numbers have grown from four in 2008 to 15 in 2009, thanks to $58,090 in funds from the United Dairymen of Idaho, WSU College of Veterinary Medicine, and Pfizer Animal Health.

"It's been a pretty incredible expansion and even more successful than we thought it would be," says Ayers.

Intern Matt Witzel, far left, in blue outfit, helps and learns from Adelino Silva, hospital manager for Toledo Dairy in Kuna. At the hospital pen, they treat sick cows first thing each morning. Conditions encountered—lameness, mastitis, pneumonia, and post-surgical care. A newborn calf gets tender attention from vet intern Pam Nalasco at Nampa's DeGroot Dairy. She helps make sure the calf gets a healthy start in life. Above, WSU vet intern Holly Waters uses an energy drip with essential nutrients for a speedy recovery for one cow with a health issue at Stewart Dairy, Nampa.

Preference is shown to Idaho students and those with an interest—but without experience—in production-animal medicine.

Watch a calf be born; get hooked on dairying

Veterinarian-mentor Dey, a self-described "Army brat and city boy," enjoys the opportunity to ignite interest in his profession. He hadn't been exposed to dairying himself until his WSU undergraduate years and immediately liked "the people, the cows, the whole environment." Fellow veterinarian-mentor Borrowman, also from the city, would never have become a dairy vet if he hadn't first milked cows at the Brigham Young University dairy.

"We have fewer and fewer students coming into veterinary school from a dairy background, but we still have the need for dairy veterinarians," says Borrowman. "It can be so intimidating for people from a non-ag background to get involved in the dairy industry that we lose a lot of people who would be interested."

Borrowman describes IBVEP as "fabulous" and the students as "excited—they're seeing everything for the first time, and it's fun to share that."

Thinking "herd," not "single animal"

Second-year veterinary student Katrina Chew got hooked on dairying as an undergraduate when she witnessed a calf birth at Cal Poly's dairy. IBVEP was a "chance to be around 4,000-plus cows for six weeks straight and to learn to make split-second decisions in a completely non-sterile environment," says the Bay Area native. "It's a 'thinking on your toes' type of situation."

It's also a herd level—rather than an individual animal—type of thinking. "In the grand scheme of production medicine, we are trying to produce a healthy, stable, sustainable product to feed people," Chew says. "It becomes a big multiplication factor: if you're working with thousands of cows, how many people are you helping?"

Weighing a possible career in large-animal surgery, Chew says the "best way to learn is to just go out there and get your feet wet, see what you actually remember, and what you are physically capable of. The earlier in your education that you explore your options, the better you can hone in on the knowledge, elective courses, conferences, and continuing education that you'll need."

That's a goal Schneider and Ayers share as well: to identify students who might be interested in large-animal specialties before they must choose electives in their densely packed third and fourth years. And if some vet internship participants learn instead that they'd rather treat dogs, cats, and parrots, at least they've had the chance to become friends of—and potentially even spokes people for—agriculture.

Idaho's program: A model for the nation?

The two AVS faculty hope the vet internship program becomes a template for early experiential training of veterinary students nationally. They also plan to beef up its beef component, in which second year veterinary student Chelsey Johnson has been their pioneer. Johnson spent an "awesome" time at the UI Nancy Cummings Center north of Salmon, learning about "cool" studies in intensive grazing and under center pivots. At Boise Valley Feeders, a feedlot north of Parma, she ran feeders, checked bunks, and doctored calves; the firm's intensively computerized record-keeping systems were "all new to me."

"The large-animal vets who are out there are getting older, and there's nobody to take over for them," says Johnson. Her veterinarian back home in western Montana says she can come back home anytime and succeed him.

For more information, visit *www.cainecenter.uidaho.edu/ibvep.htm*.

AG DAYS
University of Idaho

1 Family and Consumer Sciences senior Michelle Graham (left) and Kellie Maggard sell quick-breads to raise funds for the Food Nutrition Club at the Ag Days Food Fair.

4 Placing tomatoes just so makes the pizza perfect for two high school students who attended three of 30 workshops on campus that let them sample college courses.

2 Tom Nagle of Uniontown, Wash., guides his Belgian draft horses across campus with a trailer load of Pacific Northwest high school visitors to Moscow for Ag Days October 2 and 3, 2009.

3 Winding up her softball pitch is SheilAnne Davis, a junior in ag and extension education. It was a cool day, smells of newly mowed grass, clouds in the sky—perfect for a co-ed softball tournament. Winning the Ag Days softball competition was Clueless, a team of pre-med students.

photos by Mark LaMoreaux and Joe Pallen, UI Photo Services

5 CALS Dean John Hammel in gold hat and Mary Hasenoehrl, clapping, director of development for the college, help cheer the Vandals on to a 31 to 29 victory over Colorado State.

6 Jestine Hensley, a CALS Ambassador and junior pre-vet student, and Jesse Smit, a freshman in ag econ, help mentor some 200 high school visitors who came to Moscow from Idaho, Oregon, and Washington for Ag Days workshops and fun.

IT'S WORTH THE TRIP!

"Ag Days helped me decide where I want to go to college."

class notes

2000s

LING BABCOCK '07, Salem, Ore., is a field supervisor for the Willamette Dairy Herd Improvement Association.

MARKITA (WILLIAMS) '09 & **DREW BRAMMER '07**, Moscow, were married on June 21, 2008, and are expecting their first child in December 2009.

KRISTI (MILLER) '05 & **NATHAN BROWN '06**, Adrian, Ore., were married on September 9, 2008. Nathan is self-employed—farming and ranching—while Kristi works as a credit analyst for Northwest Farm Credit Services.

JAYSA FILLMORE '09, Grangeville, is the new agriculture science and technology teacher and FFA adviser at Grangeville High School.

ERIN HENDERSON '08, Lake Oswego, Ore., is a clinical dietician at Legacy Meridian Park Hospital in Tualatin, Ore.

ALICIA OLSON '03, Kenmore, Mich., graduated from the University of Washington School of Medicine with an M.D. in June 2009. Alicia is now doing her general surgery residency at the Detroit Medical Center in Detroit, Mich.

1990s

RICHARD DOZIER, '96, '04, Heyburn, has accepted a position with Independent Meat Company in Twin Falls after 12 years as an agricultural science instructor at Payette High School. Richard, his wife, Michelle, and children Brennan, Gabe, Sydney, and Matthew are adjusting to life in the Magic Valley.

LLOYD KNIGHT '96, Meridian, was appointed administrator of the Division of Plant Industries at the Idaho State Department of Agriculture. Previously Knight was a financial management analyst in the Division of Financial Management in the Executive Office of Governor C. L. "Butch" Otter.

MICHELLE WARD '97, Newport, Wash., completed her Doctor of Veterinary Medicine at Ross University in December 2008. Ward now works at the North Idaho Animal Hospital in Sandpoint.

1970s

SHIRLEY (HANSEN) BILADEAU '73, Boise, recently returned to Idaho from the Tri-Cities, Wash. She now works as the continuing education consultant for the Idaho Commission for Libraries.

STEVEN LEMMEL '79, Columbus, Ohio, is a 2009 Meridian award recipient at Chemical Abstracts Service (CAS). A division of the American Chemical Society, CAS provides the largest databases of publicly disclosed chemistry-related information including links to patents and original literature. The awards—highest public staff recognition of "extraordinary skills, commitment, and achievement" at CAS—are presented annually to colleagues nominated by their peers and then evaluated by senior management. Lemmel, Ph.D., a 9-year veteran at CAS, is a senior scientific information analyst.

BOB OHLENSEHLEN '71, '86, Twin Falls, was hired to be the national executive director of the 6,500-member Epsilon Sigma Phi, a nationwide extension honorary fraternity and professional development organization, effective September 1, 2009. Ohlensehlen, owner of Nutrient Management Solutions, LLC, an agricultural consulting business in Twin Falls, served as the fraternity's national president from 2003 to 2004 while serving as University of Idaho Extension educator for Twin Falls County.

1960s

JOANNA ADAMS '66, '02, Coeur d'Alene, is the public health program manager for Idaho's Panhandle Health District.

THANK YOU to all alumni who returned their alumni updates by March 31, 2009. Erin Henderson will receive a CALS travel mug. Everyone else will be sent a CALS luggage tag.

IN MEMORIAM

Margaret E. MacLeod '39
Home Economics
Rome, GA, November 7, 2008

Doris M. McGinty '39
Home Economics
Springfield, OR, February 23, 2009

Wilma I. Thomas '46
Home Economics
Nampa, June 3, 2009

D. Mark Hegsted, Ph.D., '36
Agricultural Biochemistry
Westwood, MA, June 16, 2009

Gordon L. Woods, Ph.D., '79
Veterinary Science
Loveland, CO, August 20, 2009

Help UI CALS keep you informed!

Due to severe budget cuts, the spring/summer issue of this magazine will not be printed in 2010.

Please help us know how to keep you informed during this tough economic time.

Send us your thoughts on the card inserted in this magazine, and/or fill out a slightly more detailed survey online at ***http://info.ag.uidaho.edu/magazine/.***

THANKS SO MUCH FOR YOUR SUPPORT!

Editor, *Programs & People* magazine
P&P@uidaho.edu

From Microbiology to Winemaking

The Coco and Karl Umiker Story

story by BILL LOFTUS photos by MARK LAMOREAUX

COCO GARDNER UMIKER '04 became a winemaker in college as part of a microbiology course lab. The assignment: Study fermentation using either beer or wine. She chose wine.

Five years after earning her bachelor's degree in microbiology, molecular biology and biochemistry from the University of Idaho, she's overseeing the crush (harvest) at Clearwater Canyon Cellars, a Lewiston-based winery that will produce 700 cases or 8,400 bottles of wine this fall.

"They taught us about fermentation, and we got the option to make beer or wine. I chose to make wine and had so much fun doing it. That was my first start into wine making," she recalls. "The wine was so-so. I took it home, we had a blind tasting with Carlo Rossi (jug wine), and my wine won hands down."

She and Karl Umiker '00 married in 2004. He earned a master's in soil science from Idaho after his bachelor's in chemistry in Arkansas. The couple started making wine together in college and in 2002 started talking with their current partners in the Clearwater Canyon Cellars, which released its first wine in 2005.

Soil scientist and microbiologist: a perfect marriage

"A few things came together for us. This is truly a perfect marriage. Karl knows about soils. Chemistry and microbiology is all wine really is, and that is my background that I gained here at UI, and it gave us a great base to work from," said Coco, a third generation Vandal.

"And then we had the land. We were fortunate to be in a family that has a farm," she said. Her grandfather Ralph Nichols moved to his farm in Lewiston as a one-year-old with his parents, and lived on and worked the land his entire life. Now 94, he helped his granddaughter and her husband establish what is now a 3-acre vineyard near his home.

100-year history of Lewiston area winemaking

The more she learned, the more Coco liked about the idea of growing grapes and making wine in Lewiston. "There's a history of wine making in the Lewiston-Clarkston Valley that is long lived—more than 100 years. It was a lot bigger then." One of their neighbors, retired National Weather Service meteorologist Bob Wing, best knows that history. "The man has a passion not just for wine, but also for wine made from grapes grown in this region. I'm sure there were many people like Bob a hundred years ago, but because there's such a small industry now, it's hard to find people like that: people who have passion for making wine from grapes grown in our valley.

"At the time that was kind of a new concept to us," she said. "We were starting to get this interest in wine. But then it was, wow, wine from grapes grown in our valley, and my family has some land. And then we found out there used to be a vineyard planted right across the street." After graduating from Idaho, Coco went to work for Whitman Cellars in Walla Walla. She worked from August through the end of harvest on the crush there and supervised the fermentation of Clearwater Canyon's first batch of wine.

"After working in Walla Walla and making our first vintage, it was probably the first time I realized I could

sacrifice other things for the job and not regret it," she said. "I was enjoying it so much it didn't seem like work even though it was work, a lot of work."

Management by expertise. Goal: the best wine

The two work together both in the winery in north Lewiston and in the vineyard. They split management by expertise. Coco has final say in the winery, and Karl has final say in Umiker Vineyard, which they operate as a separate business. Most of its grapes go to their winery, but this fall it also provided grapes to nearby Merry Cellars in Pullman, Wash., and Coulters Creek Winery in Juliaetta.

The 2009 harvest was bountiful, edging close to 12 tons of Cabernet Franc, Cabernet Sauvignon, Merlot, Syrah, Chardonnay, Viognier, and Riesling from the 3 acres. Most were used to produce the Clearwater Canyon wine.

The harvest was the biggest in the Lewiston-Clarkston Valley since prohibition in Idaho—1916 to 1933—dried up the demand for wine and made vineyards uneconomical.

"Our entire mission at Clearwater Canyon, our goal, is to make ultra premium wines from grapes grown in the Lewiston-Clarkston Valley. And now we're doing it," she said. The winery makes two signature wines each year: Lochsa, a white made from Chardonnay, Viognier, and Riesling; and Renaissance Red, a blend of whichever grapes work best together. And each year, the winery offers other wines to reflect the season's bounty.

From academia to the sales room; Avoiding wine that tastes like wet dogs

Beyond the winery, Coco is pursuing an academic interest in wine. She enrolled in a doctoral program at Washington State University and the Bi-State School of Food Science operated collaboratively with Idaho.

Her research focus is on detection and control of *Dekkera bruxellensis*, a yeast that contaminates wine usually during the aging process in the barrel. "It produces a taint in wine that some say is like Band-Aids or wet dogs and some things I can't mention probably," she said.

"I want to know, because it might influence what I'm doing in the winery," she said. "Some of the experiments I have done have greatly influenced my practices at the winery. This is one of those situations where what you learn is being applied directly and is improving our product. And that's awesome!"

Clearwater Canyon Cellars offers wine tastings Saturdays from 1 to 5 p.m. until Christmas. The winery is located at 1708 6th Ave. N, Suite A in north Lewiston.

COLLEGE OF AGRICULTURAL AND LIFE SCIENCES

ALUMNI & FRIENDS ASSOCIATION BOARD OF DIRECTORS

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The Alumni & Friends Association assists the college with alumni events, helps recruit students, and promotes the College of Agricultural and Life Sciences wherever and whenever possible. If you are interested in becoming active or in filling a vacant position on the board, please call 208.885.6446 or send an e-mail to *CALSAlumni@uidaho.edu*

COLLEGE OF AGRICULTURAL AND LIFE SCIENCES

Winter-Spring 2009-10 Events Calendar

For event information call 208.885.4038 or e-mail *knelson@uidaho.edu*

NOVEMBER 2009

3	WSU College of Ag, Human & Natural Resources Career Fair, Pullman
7	Football vs. Fresno State in the Kibbie Dome
14	Football vs. Boise State at Boise
23-27	Fall Recess
26-27	Thanksgiving – UI Closed
28	Football vs. Utah State in the Kibbie Dome

DECEMBER 2009

4	Alumni Holiday Reception at Coeur d'Alene Resort
11	Alumni Awards for Excellence Banquet, Moscow
12	Winter Commencement Day
19	Close of Fall Semester
24-25	Christmas – UI Closed
28-30	UI Closed to public
31	UI Holiday

JANUARY 2010

1	New Year's Day – UI Closed
18	Martin Luther King Jr./Idaho Human Rights Day – UI Closed
21	Auditorium Chamber Music – Borealis String Quartet

FEBRUARY 2010

8-10	Larry Branen Idaho Ag Summit, Boise
10	All-Majors Career Fair, Moscow, SUB Ballroom
11	CALS Alumni and Friends Board Meeting, Boise
15	President's Day – UI Closed
24-27	Lionel Hampton Jazz Festival

MARCH 2010

2	Amelia Piano Trio: Auditorium Chamber Music Series,
15-19	Spring Recess

APRIL 2010

7	Silver and Gold Tree Dedication
16-18	Mom's Weekend

MAY 2010

5	Commencement, Boise
6	Commencement, Idaho Falls
10	Commencement, Coeur d'Alene
15	Commencement, Moscow
31	Memorial Day – UI Closed

Dear Alumni and Friends:

Each year the College of Agricultural and Life Sciences has cause to celebrate. This year record enrollment tops the list, followed by students succeeding academically, philanthropically, and professionally, as you will read in the many articles in this issue of *Programs & People*. CALS has increased the total college enrollment by more than 6 percent! As alumni and friends of the college, we know first hand that students pursuing degrees in CALS have made an excellent decision!

CALS Alumni continue to support recruitment efforts in a variety of ways throughout the year. Opportunities to get involved include volunteering in the Ag Pavilion at the Western Idaho Fair or the Twin Falls County Fair, where CALS has three displays promoting the college, research, and extension. Local alumni have been fantastic supporters this fall, volunteering in preparation for Ag Days and obviously in recruitment efforts.

During Ag Days, the CALS Alumni Board of Directors generated ideas for events and activities for which the college could partner with the University of Idaho Alumni Association. While many ideas were suggested, we are always open to new ones. If you have ideas that you'd like to see implemented over the next year, please feel free to contact us with your thoughts.

Finally, it is with great pleasure that we welcome President Nellis to the Vandal family. I believe that his leadership and experience with land-grant institutions will be a great asset to the college and the State of Idaho. I look forward to a productive, successful year, recognizing alumni for their accomplishments and promoting CALS to all. If you're interested in volunteering or becoming a more active alum, feel free to drop us an e-mail at *calsalumni@uidaho.edu.*

Jason W. Tindall
President, CALS Alumni & Friends Association

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Send in your Alumni Updates &
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Moved? New job? Just married? Kudos? Let us know! We welcome your submissions for classnotes.

All alumni who return a completed alumni update card will be entered in a drawing. The grand prize winner will receive a CALS coffee mug. All entries will receive college luggage tags. So send those updates!

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☐ Please check if new address

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City/State/Zip _____

Phone home _____ office _____ e-mail _____

Here's my news! _____

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Mail us, fax us, or visit our Web site to keep us updated. Office of Development, College of Agricultural and Life Sciences, University of Idaho, P.O. Box 442331, Moscow, ID 83844-2331. Fax 208.885.6654. *www.cals.uidaho.edu/classnotes/*

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IN THIS ISSUE

photo by MARK LAMOREAUX

Don't miss Foltzville if you're on our Moscow campus between Thanksgiving and Christmas! Stop by Ag Science Room 40 to have a hoot and hear a toot while learning about model economics and even multiplier effects. John Foltz, an ag economist before he became CALS associate dean and director of academic programs, presides over his model train village served by five 0-gauge Lionel trains (1:48 ratio). Foltz began collecting in the first grade. Today Foltzville boasts farm, food, and transportation sectors, "just like a 1950s real community," grins Foltz. Ferris wheel and carousel organ music plays, trains whistle, a neon sign fills an endless cup of coffee over a diner, teensy trains run in the town's toy shop, fish swim in a tiny aquarium, and a tiny man sweeps debris from a poultry car. "It's 3.1 times more cost effective to ship produce today by train than by truck," says Foltz, ever the economist. "Trains will be back."