



UI Extension Education Trends 2002-03:

Agriculture and Natural Resources

Idaho forestry takes a LEAP: Logger Education to Advance Professionalism

Knowledge is power. Logger education proves this adage is true in the forest products marketplace.

Logger Education to Advance Professionalism (LEAP) is a decade-old, nation-wide extension program begun at the request of New England loggers looking to effectively market themselves to private forest owners. The New England program proved so successful that the USDA provided grant funding to four additional pilot programs, one of which was in Idaho.

LEAP, and variations of the program, are now delivered in more than 20 states across the nation.

Idaho Forest Practice Laws set minimum criteria to protect forest water quality and other forest values. Logging operations are inspected by state foresters to make sure they comply with these laws. LEAP helps loggers understand the “spirit of the law,” so they can modify their practices to reach, and even exceed, forest management standards.

“The program makes a difference in loggers’ implementation of improved forest practices,” said Chris Schnepf, University of Idaho Extension educator. “There have been some unforeseen benefits as well. One of those is the development of the Idaho Pro-Logger program which requires LEAP certification, plus 16 hours of continuing education every year.”

In Idaho, the LEAP program has been guided by local logger steering committees, Schnepf explains. “Extension operates on the fundamental principle of learner-driven programs. We know what the science is, but we don’t know the critical questions and the learning styles of the audience.”

The 3-day LEAP course covers forest ecology, silviculture and water quality issues. Loggers gain a better understanding of the environmental impact of a cut, learn how to harvest trees with as little impact on water, soils, wildlife, and the rest of the ecosystem as possible, and also learn effective methods of forest regeneration. Taken together, these are the vital elements of sustainable forest management.

As of 2003, more than 1000 Idaho loggers have been through the program. Program delivery has been focused in northern Idaho, though LEAP has also been presented in Boise, Horseshoe Bend, and Idaho Falls.

Nearly all of Idaho’s forest products companies require their loggers hold LEAP certification, Schnepf said. One of the forces driving that trend is consumer demand for timber harvested using sustainable forest management practices. LEAP certification of loggers is essential to the production of sustainable forest products such as lumber that complies with American Forest & Paper Association Sustainable Forestry Initiative (SFI) requirements. SFI certified lumber is sought by ecology- (and profit-) minded companies

like Home Depot, the nation’s second largest retailer.

While LEAP certification gives loggers a lot more leverage in the marketplace, it also has obvious long-term benefits for the environment. “LEAP is designed to give loggers a basic working literacy in applied forest ecology, with the ultimate goal of forest practices that sustain a whole range of ecological values and the long-term viability of rural forested communities.”

Through LEAP, loggers retain their way of life, and forests thrive.

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Range Extension educators: Doing battle against Idaho's pests

Fighting pests is all in a day's work for UI Extension educators.

In 2002, Elmore County faced a major outbreak of Mormon crickets and grasshoppers. To stave off the influx, UI Extension Educator Mir-Mohammad Seyedbagheri and his staff distributed 118,600 lbs. of bait to the county's farmers and ranchers. Extension also organized the **Smith Prairie and Neighboring Areas Mormon Cricket Taskforce**, to collectively battle the bugs. In cooperation with Animal Plant Health Inspection Service, Idaho State Department of Agriculture, Bureau of Land Management and the U. S. Forest Service, Extension also facilitated aerial sprays.

Just days after the outbreak, extension evaluations revealed 92% control.

When they were not actively doing battle in 2002, range management Extension educators also presented classes, provided one-on-one consultations, of-

fered pesticide recertification training, biological weed control programs, and integrated pest management classes. They also conducted the thirty-first annual Pacific Northwest Range Short Course, **Challenges in Grazing Management**, focused on annual rangeland issues and drought. Range users from Idaho, Oregon, Washington, Nevada, Montana, Wyoming, and Utah attended.

Other Extension classes offered in range stewardship in 2002 included instruction on how to monitor long-term range use impact, and how to manage the region's sensitive riparian areas (areas influenced by water).

Partners in UI Range Management Extension education include the state's ranchers, federal and state land management agency personnel, Native Americans, students, Idaho citizens, and in 2002 particularly, the people of Elmore County.



Extension teaches landscaping to survive wildfire

Landscaping decisions are usually based firmly on personal quirks or neighborhood covenants, but Extension educators in the tinder-dry Northwest are teaching some principles of landscaping as a survival technique.

"The main thing that we look at is creating a defensible space," said Yvonne Barkley, UI associate Extension specialist and lead author of *Landscaping for Fire Prevention*. Idaho is part of a large area of the country with fire-based ecosystems, the publication explains. Fire is part of Idaho's ecological history, and will continue to be a force shaping its future. Barkley and co-authors advise those living in forested areas to "view wildfire the same way residents of the Midwest view tornadoes—as an expected natural phenomenon that can devastate property and life—and prepare accordingly."

Creating a defensible space entails laying out concentric landscape circles of low fuel plants surrounding the house to serve as fire breaks. Suggestions include removing or mowing tall grasses within a 30 foot radius; taking out highly flammable shrubs in a 100 foot radius; thinning shrubs growing 100 feet or further from the house; keeping remaining shrubs healthy and pruned so they hold some moisture and are a little more fire resistant; keeping trees and branches at least 15 feet from stovepipes or chimneys; and thinning and pruning large trees to keep fire from moving through the stand—either by crowning (jumping from tree top to tree top), or moving on fuels between trees.

As Barkley notes, there is no plant species that will not burn, but there are many that are more fire resistive than others. The rule of thumb is to get the big fuels out of the yard and away from the house, whether they are dry leaves or dead trees.

More than 500 Idaho landowners have taken the **Landscaping for Fire Prevention** class during its ten year existence and thousands more have used the accompanying publication to improve their odds should wildfire threaten their homes. Says Barkley of the preventive landscaping measures, "It gives land owners peace of mind to know there's something they can do to protect their property from wildfire."

For more information, or to download *Landscaping for Fire Prevention*, go to: www.cnr.uidaho.edu/extforest/f3.pdf



Idaho's Got Milk, bilingual programs help it Get More

Got Milk? The answer in Idaho is “Yes.” and “Si.” Idaho has more milk in 2003 than ever before, and is producing it almost as fast as they used to pump it out of the nation’s “cheese basket,” around the Great Lakes.

“We’re not producing as much as Wisconsin, but we’re neck-in-neck with Minnesota,” says Rick Naerebout, assistant to the director of the Idaho Dairymen’s Association.

“We first passed Minnesota in 2002. We go back and forth with them as the 5th or 6th largest milk producing state in the nation.”

In August 2002, there were 392,000 dairy cows in Idaho. Idaho’s 820 dairies provided over 8 billion pounds of milk last year. The estimated \$1 billion in milk receipts received by Idaho dairy producers in 2001 contributed more than \$4 billion to the state’s economy through allied industry and dairy processing, sales, and jobs.

The recent and tremendous growth of Idaho’s dairy industry drives the Extension education commitment to help dairies succeed. Extension dairy specialists and county extension educators have lately collaborated to address the state’s most immediate dairy issues, ranging from reproductive efficiency and effective milking techniques to financial risk management.

These programs are delivered as one-on-one farm consultations; through the dispersal of research-based, printed materials; and through presentations at statewide and regional meetings.

Many of Idaho’s dairy managers and much of the dairy industry’s labor force are Spanish speaking. Extension educators are making a concerted effort to consult and teach in the language used on-the-ground on Idaho’s dairies and farms. Twenty Extension faculty are enrolled in Spanish language courses, focusing on attaining a working farm and dairy vocabulary.

Closing the language gap has already brought rewards. Extension’s **Milking School** is also delivered in Spanish as **Clase Del Ordeno** in southwestern, south-central, southeastern and northeastern Idaho. The two-day program is taught in English the first day, primarily to owner/operators of the dairy, and the second day to Spanish-speaking managers, milkers, and herdsmen.

Extension also delivers Spanish language classes in food safety, gardening, potato farming and many other subjects. The classes are well received, and Extension continues to develop supportive materials such as Spanish language videos and bilingual publications.

Extension education delivered in Spanish and English has a measurable impact. After attending Clase Del Ordeno with his employees, one producer remarked, “After consultation with my employees and through subtle changes in our milking procedures, we realized a gain of two to three pounds of milk per day.”

What we learn at Cereal School

Last year more than 750 Idaho farmers attended UI Extension cereal schools. The schools cover production and marketing issues for grain growers. Part of the 2002 curriculum focused on using biological controls—bugs fighting bugs—to increase yield and reduce the use of chemical pesticides.

Larval parasites were released at the Parma Research and Extension Center in a joint effort by UI Extension and the Idaho Department of Agriculture, to reduce cereal leaf beetle populations in the area. The introduced parasites are thriving, and are keeping the destructive cereal leaf beetle population in check.

Growers converting land to reduced tillage and direct seeding systems to conserve soil and water are also looking for new ways to manage pests. Biological controls allow growers to increase yield, save the money they would have used on extensive chemical treatments, and reduce the amount of residual chemicals in the environment.



What goes into the cow comes out of the cow: Nutrient and waste management is an Extension priority

The best way to address any complex issue is with a carefully thought out plan. In Idaho, now ranked as the nation's 6th greatest dairy producing state, what goes into the cow and comes out of the cow is one of those issues.

As of July, 2001, a deadline set by the Idaho Department of Agriculture, the vast majority of Idaho dairies had completed requisite **Nutrient Management Plans**. The plans, now required of Idaho producers by state law, serve as guidelines to ensure that nutrients from animal waste, like phosphorus and nitrogen, do not contaminate soil and water.

Environmental concerns about animal waste and the concentrated nutrients they contain are largely focused on maintaining healthy ground and surface water. Nutrient Management Plans, created by producers with the aid of Extension educators, demonstrate how their dairy wastes can be stored, treated, and managed to protect ground water, surface water and soils.

To write their plans, dairymen completed 23 pages of worksheets provided as part of University of Idaho Extension workshops. That information was fed into multi-agency, Idaho **OnePlan** software, a program that assesses complex livestock, crop, soil, irrigation and climate data and identifies ways to guard against runoff and leaching of animal waste.

The software was developed by experts from the UI, Idaho Dairymen's Association, Idaho Soil Conservation Commission, Idaho Department of Agriculture, USDA Natural Resources Conservation Service, and the Environmental Protection Agency (EPA), a group that one Extension educator described as "a dream team."

Geographic Information System (GIS) OnePlan software lets producers zoom in on their dairies and download key soil and water data, even allowing them to run "what-if" scenarios. For example, users can find out what might happen if they add more cows to the herd, and find answers to related questions, such as whether or not they have enough acres to spread the additional animal byproducts across without exceeding crop needs.

"All livestock operators produce nutrients as a byproduct of milk or meat production," said UI Extension Educator Bob Ohlensehlen. "Those nutrients aren't really wastes, they're resources, and managing them properly to maximize production efficiency and protect the environment is really the right thing to do."

With that goal in mind, an extensive **Nutrient Balance Study** is also being conducted by Extension researchers, with the objective of helping producers reduce the amount of nutrient in feed, (therefore reducing waste nutrient output) without affecting production. By reducing feed nutrients, dairymen will also be able to reduce the nutrient loading of soils receiving animal waste as a fertilizer outside the dairy.

Producers can use their management plans to meet changing state and national regulatory requirements.

"In February of this year, the EPA updated the rules on how manure is going to be managed," said Twin Falls Extension Educator Ron Sheffield. "Because of the work that has already been done in nutrient management in Idaho in the past five years, our producers are already ahead of the game."

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Making more money: Extension offers Risk Management classes

Joe Dalton, UI Extension dairy specialist in Caldwell and a risk management workshop instructor, says the Dairy ARMS program helps dairy producers minimize the alternating wishfulness and despair that can cloud decision-making.

“The goal should be to maintain profitability at some level on a year-in year-out basis, rather than just weathering the storm at the lowest prices and reaping the rewards of the highest prices,” he said.

That, in a nutshell, is the goal of most dairy farmers. Risk management education, conducted throughout the state through Extension’s **Achieving Risk Management Success in Dairy (ARMS)** and the **Dairy Options Pilot Program**, aims at helping them meet that goal. But the path to profitability is thornier than it may seem at first glance: Milk prices currently swing as much as \$9 per hundred pounds between highs and lows.

The ARMS program has been integral in educating dairy producers regarding milk markets, cost of production, and historical economic price cycles. The Dairy Options Pilot Program, in cooperation with the USDA, has been successful in teaching dairy producers the value of put options, a unique means of securing a floor price for a portion of their milk production.

“Purchasing put options provides the dairy producer a means of putting a floor under the milk price,” explains Wilson Gray, an Extension educator teaching risk management. “By using this strategy the dairyman can set the lowest price they will receive for milk. If prices increase, the producer would still benefit from the price rise, minus the small cost of the put premium.”

Risk management program participants learn about basic and advanced marketing strategies and before leaving the three day session, complete marketing plans for their own dairies.

Honing risk management skills is important to marketplace success and survival, particularly for small producers. “Larger dairies have other places where they can save some money, but we just don’t have that ability here,” said Bear Lake County Extension Educator Joel Packham.

Highly successful Extension risk management courses have also been tailored to the needs of Idaho’s potato farmers, beef producers, and grain growers.

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Potato Best Management Practices: More is not always better

A **field-scale trial** of the UI’s recommended best management practices (BMP’s) for potato production surprised even its researchers with outstanding first-year results. Not only did the BMP’s reduce crop input costs significantly, but also yielded Rexburg area farmer Lawrence Jensen a bumper crop of 42,800 lbs. of potatoes per acre. The average yield for the area is between 30,000 and 35,00 lbs. per acre.

“The objectives of this project were to establish a field demonstration highlighting a potato grower who implement the UI BMP’s. We established plots within the field to compare BMP’s to a high input/maximum yield approach; and to enhance grower confidence regarding UI BMP’s,” said Extension Educator Bryan Hopkins, who worked on the project.

High input plots were established on the same farm as the BMP plots by applying additional fertilizer and pesticide treatments in an effort to ensure maximum yield. When the two treatments were compared, BMP plot yields showed in an increased profit of \$159 per acre. Additionally, the high input plots’ cost was \$205 per acre, more than for the BMP plots, bringing the net profit increase to \$364 per acre for BMP’s.

“Model growers using judicious inputs and management practices generate greater profits as compared to high input systems,” said Hopkins. “More is not always better.”

Idaho agencies work cooperatively to provide Forest Stewardship education

Over 2 million acres (11%) of Idaho's forests are owned and managed by thousands of non-industrial private forest (NIPF) owners. Forest owners have unique goals for their property, ranging from producing a timber income to providing "a place to get away from it all." However, one goal common to forest landowners is to exercise stewardship, for themselves and future generations.

In 2001-2002, University of Idaho Extension conducted a series of educational activities titled **Strengthening Forest Stewardship Skills**. These programs were supported in part by a partnership project grant from the Idaho Forest Stewardship Program, a cooperative effort of: University of Idaho Extension, Idaho Department of Lands, U.S. Forest Service, Farm Services Agency, Natural Resources Conservation Service, Idaho Department of Fish and Game, Consulting Foresters, Idaho Association of Soil Conservation Districts, Idaho Forest Owners Association, Idaho Conservation League, Idaho Nature Conservancy, Idaho Tree Farm Committee, Idaho Resource Conservation and Development Areas, Intermountain Forest Industry Association, Nez Perce Tribal Forestry, and the Rocky Mountain Elk Foundation.

Through cooperative efforts like this, Extension and other agencies attempt to enrich the lives of Idaho's citizens, and manage the ecosystems that sustain them.



Udderly focused: Extension aims at increasing reproductive efficiency

Cows give more milk in the first 150 days of pregnancy, so there is no mystery as to why dairy farmers and Extension educators are looking for more efficient means of insemination for Idaho's milk cows: They want to keep the cows pregnant and lactating.

As Idaho's dairy producers look to enhance profitability, the demand for productive milk cows continues to grow.

In fact, lowering the cull rate—the rate of removal of unproductive milk cows from the herd—is a top priority in keeping Idaho's dairies competitive. The USDA National Animal Health Monitoring Systems Dairy '96 study reported that the number one reason for culling was reproductive failure, most often through failure to impregnate. Idaho's high average annual cull rate of 38%, and the consequent low average lactations for Idaho dairy cattle, is of great concern because of its immediate impact on dairy profitability.

On a statewide basis, researchers find that indicators of reproductive efficiency such as the average number of days the animal is not pregnant called, average days open; the number of attempts it takes to artificially inseminate a cow, referred to as services per conception; and the percentage of cows impregnated on first attempt, or percentage first service conception, do not change without "some serious tweaking," said UI dairy researcher Amin Ahmadzadeh.

"The heart of our program is to reduce the cost of impregnating the cows," said Ahmadzadeh. "The applied research has direct impact on farm profitability. Right now the approximate cost of an average 110 days open is \$3 per day per cow. With about 395,000 cows in Idaho, even if we can decrease the days open by 20, you're talking about more than a \$23 million annual savings, or profit."

Idaho is the second largest dairy state in the western US. Herd expansions and movement into Idaho have been fueled by abundant, inexpensive feed supplies, plentiful land and water with topography suited for large herds, proximity to numerous modern milk processing facilities, and knowledgeable dairy producers enhancing their profitability through high volume, low cost production.

To enhance that scenario, all Idaho dairies need is a cow that gives more milk.



And the beet goes on: Water conservation increases beet yield, profit, and soil health

Sometimes less is more, and sometimes it's a whole lot more. Extension researchers found this to be true particularly in the case of water conservation and sugarbeet production.

Most growers commonly over-irrigate sugarbeets, though excess irrigation can lead to increased disease, nutrient leaching, increased erosion, and lower yields.

The Extension **Sugarbeet Irrigation Efficiency Project**, now in its fourth year, was originally a collaboration between Washington County Extension Educator Steve Reddy, and Canyon County Extension educators, UI Sugarbeet Specialist John Gallian, UI Irrigation Specialist Howard Neibling, sugarbeet growers, Tiegs Agriculture Consulting, and Amalgamated Sugar Company. The project's objective is to demonstrate the use of a soil moisture monitoring program to achieve proper irrigation. Improved irrigation relies on known principles of reduction of soil erosion and nutrient leaching and improves sugarbeet production and quality.

Researchers accomplished all of those goals in the first three years of the project. In 2001, a project in Canyon County was conducted on an 22 acre field of surface irrigated sugarbeets. The control plot was managed according to the grower's normal irrigation and fertility practices. The treatment plot was managed according to data collected from soil moisture monitoring equipment, soil sampling and visual observation. Water applications were 20 to 15% lower on the treatment plot than on the control plot. At harvest, the treatment plot yield was 1.7 tons per acre higher. That's a lot more sugarbeets, grown with quite a bit less water.

"We were hoping to get this type of positive result, but were very pleased when it actually materialized," said Canyon County Extension Educator Jerry Neufeld.

As a result of the difference in management practices between the two plots, the grower's costs for the treatment plot, where less water was used, were approximately \$90 per acre less than in the control plot. Very similar results were obtained in second study, conducted in 2002.

Based on a reported 14,000 acres of sugarbeets in Canyon County alone, widespread adoption of these practices could potentially reduce growers' production costs by \$1.3 million annually.

In 2001, soil water from the root zone in both plots was also analyzed for nitrates. The highest nitrate value from the treatment plot was 4.5 parts per million (ppm), only 1/50th the highest value from the control plot (190 ppm).

All the collected data indicate that when irrigation and fertility are properly managed, less water can produce more sugarbeets, increase profits, and help the environment.

"Results to date indicate adopting these practices can benefit the grower in any year," Neufeld notes. "However, they become even more important in drought years like 2003 is shaping up to be. It may just be the practice that gets your sugarbeet crop through the year."



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Satellite technology boosts Idaho's irrigation management

UI and Idaho Department of Water Resources research conducted with satellite imaging confirms that space-based images are nearly as accurate as time-consuming ground-based studies in calculating how much water evaporates from plants and soils.

The newly-available satellite data is beneficial to researchers and farmers, providing an essential element in the equation that ultimately measures how much water is available in the aquifer.

When scientists subtract the amount of moisture lost in evapotranspiration from precipitation and irrigation, the difference is the amount of water potentially available to recharge the aquifer.

UI Water Resource Engineer Rick Allen translates what that means to Idaho farmers. "Coupled with some of the advances occurring in precision agriculture, these field data should help farmers evaluate their irrigation systems and operations and perhaps increase their yields and profits."



Virtual xeriscaping? Consumer horticulture goes on-line

University of Idaho Extension brought environmental and urban horticulture education to nearly 18,500 Idahoans in 2002. As they get their programs on-line, that number may rise exponentially.

"One thing that we are working on right now is developing information packages for personal training, and to be used to teach classes, using internet, interactive video, and CD ROM technology," says Extension Specialist Dan Barney. "These technologies allow the information to be disseminated throughout the state, to reach Idaho's community as a whole, and not just its larger population centers."



The effort to expand UI consumer horticulture's area of impact, and decrease travel costs, is encouraged by College of Agricultural and Life Sciences Interim Dean, Michael Weiss, also a professor in the University's Plant, Soils, and Entomological Sciences Department.

"Basically, we're trying to do more with less, like everybody else," said Barney. "Faculty and staff numbers and funding have

been greatly reduced during the past two years. Funding is tight, and we are trying to serve community needs as best we can using technology to fill in the gaps."

Drought conditions throughout the state have sparked renewed interest in xeriscaping (landscaping with drought resistant plants) and drip irrigation systems. Workshops, short courses, field demonstrations and tours have resulted in 825 people increasing their knowledge of how to reduce water use while maintaining aesthetically pleasing landscapes and productive gardens.

"Xeriscaping and other water-conservation practices are taught as a matter of course in all of our programs," Barney said. "In northern Idaho it's always useful to conserve water, and in southern Idaho you simply don't have enough water to begin with."

In the late '80s and early '90s, xeriscaping became the buzz word of consumer horticulture. Some extension educators and specialists found consumers often had negative perceptions of xeriscaping, equating it to concrete and gravel landscapes devoid of plants. "Today, most of us simply teach environmentally-sound water management and conservation practices without using the emotionally-charged word," said Barney.

While they reach many citizens now, getting consumer horticulture information on-line will give everyone in the state access to effective water-saving practices and other essential information.

"The role of Extension education is to provide the public with information that is based on sound scientific principles," Barney said. "The computer and electronic media age has been a boon in increasing people's access to information. Unfortunately, much of that information reflects personal opinions, apocryphal accounts, and superstition. Through the Master Gardener and related programs, the University of Idaho provides the citizens of our state with unbiased, science-based knowledge that they can trust."



For more information on Extension programs, call 208.885.5883 or access our website at www.uidaho.edu/extension