7th ANNUAL WESTERN REGION EXTENSION PROFESSIONAL DEVELOPMENT CONFERENCE

Prineville, Oregon, October 15 and 16, 2008

October 15th, Professional Improvement Symposium
October 16th, Tour of Central Oregon Agriculture

2008

ACKNOWLEDGEMENTS

Oregon Agriculture Extension Association (OAEA) greatly appreciates those who contributed to this meeting and worked so hard to make it a success.

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Alltech Pacific Northwest

&

PerforMix Nutrition Systems

Thanks to Tim Deboodt, Mylen Bohle & Barbi Riggs for tours, meals and accommodations in Prineville.

Thanks to Utah State University for conducting the abstract review and editing.

Western Region Extension
PROFESSIONAL DEVELOPMENT CONFERENCE
October 15-16, 2008
OSU Crook County Extension Office
498 SE Lynn Blvd, Prineville, Oregon

AGENDA

WEDNESDAY, OCTOBER 15TH
PROFESSIONAL IMPROVEMENT SYMPOSIUM

8:00 – 8:40 a.m.		Registration
8:40 - 9:00 a.m.	**Welcome & Introductions**	Cory Parsons, Chair
9:00 – 10:15 a.m.	**Presentation of Papers (**concurrent sessions)	**Rooms 1 & 2**
10:15 – 10:30 a.m.		Break (Room 3)
10:30 – 11:45 a.m.	**Presentation of Papers (**concurrent sessions)	**Rooms 1 & 2**
11:50 – 1:00 p.m.	**LUNCH**	**Room 3**
1:00 – 2:15 p.m.	**Presentation of Papers (**concurrent sessions)	**Rooms 1 & 2**
2:15 – 2:30 p.m.		Break (Room 3)
2:30 – 4:25 p.m.	**Presentation of Papers (**concurrent sessions)	**Rooms 1 & 2**
4:30 – 5:00 p.m.		Wrap-up, Evaluations and Discussion

THURSDAY, OCTOBER 16TH
PROFESSIONAL IMPROVEMENT TOUR

7:30 a.m.	Depart Stafford Inn for Tour of Central Oregon Ag (Lunch Provided)
4:30 p.m.	Return to Stafford Inn and conclude workshop and tour

Thanks to Alltech Pacific Northwest and Performix Nutrition Systems

Western Region Extension
PROFESSIONAL IMPROVEMENT TOUR
October 16th, 2008

Itinerary for Ag. Agent Professional Improvement Tour

7:30 a.m.	Leave Stafford Inn (Prineville)
8:45	Arrive Pelton Dam Overlook (Lake Billy Chinook)
10:00 a.m	Load Bus
10:30	Arrive Round Butte Seed Growers (Culver)
11:15	Load Bus
11:30	Arrive Maragas Winery (Terrebonne) Tour of Winery and Lunch
1:30 p.m.	Load Bus
1:45	Arrive Ankony Ranch (Terrebonne –near Crooked River Ranch)
2:45	Load Bus
3:00	Arrive Pumpkin Patch (Terrebonne)
4:00	Load Bus
4:30	Arrive Stafford Inn in Prineville

Estimated total miles = 100

Western Region Extension
PROFESSIONAL IMPROVEMENT CONFERENCE

PRESENTATION SCHEDULE

SESSION I (Room 1)		
EXTENSION PROGRAMMING	**9:00-9:15 a.m.**	**FARM SUCCESION AND ESTATE PLANNING WITH PERSONAL COACHING FOR PARTICIPATING FAMILIES** B. Tuck, Oregon State University
	9:20-9:35 a.m.	**BRIDGING THE URBAN - RURAL DIVIDE** G. Delaney, Oregon State University
	9:40-9:55 a.m.	**JUAB COUNTY SAFETY CERTIFICATION PROGRAMS** J.E. Banks, Utah State University
	10:00-10:15 a.m.	**COMPOSTING SCHOOL – MATERIALS AND METHODS** M.E. de Haro Marti, University of Idaho
	10:15-10:30 a.m.	**BREAK**
	10:30-10:45 a.m.	**LESSONS FOR LANDOWNERS LEASING RIGHTS FOR WIND-POWERED ENERGY GENERATION** S. Macnab, Oregon State University
	10:50-11:05 a.m.	**IDAHO'S DISTRICT III 4-H DAY CAMPS – SOMETHING FOR EVERYONE** C.A. Kinder, University of Idaho
HORTICULTURE	**11:10-11:25 a.m.**	**DEVELOPING RESOURCES TO HELP URBAN FOREST PROFESSIONALS PROPERLY IDENTIFY AND TREAT COMMON ABIOTIC STRESSES IN WOODY ORNAMENTALS** J. Gunnell, Utah State University
	11:30-11:45 a.m.	**THE "DON'T BUG US CAMPAIGN" IN UMATILLA COUNTY, OREGON** C. Kaiser, Oregon State University
	11:45-1:00 p.m.	**LUNCH**
	1:00-1:15 a.m.	**A REGIONAL APPROACH TO MASTER GARDENER AND HORTICULTURE TRAINING IN SOUTHEASTERN WASHINGTON AND NORTHERN IDAHO** M.D. Heitstuman, Washington State University
	1:20-1:35 p.m.	**CERTIFIED OREGON LANDSCAPES, A SUSTAINABILITY CHECKUP** S.B. Renquist, Oregon State University
	1:40-1:55 p.m.	**CURLY TOP RESISTANT TOMATO VARIETIES FOR SOUTHERN UTAH** R. Heflebower, Utah State University

ANIMAL SCIENCE	**2:00-2:15 p.m.**	**PARTICIPATORY EXTENSION PROGRAMMING** B. Riggs, Oregon State University
	2:15-2:30 p.m.	**BREAK**
	2:30-2:45 p.m.	**THE CHALLENGES ASSOCIATED WITH DEVELOPING AN AIR EMISSIONS CONTROL PROGRAM FOR THE OREGON DAIRY INDUSTRY** T. Downing, Oregon State University
	2:50-3:05 p.m.	**EQUINE MANGEMENT THROUGH A TRIBALLY OPERATED ANNUAL HORSE SALE ON THE WARM SPRINGS INDIAN RESERVATION** F.A. Brummer, Oregon State University
	3:10-3:25 p.m.	**CEDAR LIVESTOCK AND HERITAGE FESTIVAL – A CELEBRATION OF AGRICULTURE AND OUR HERITAGE** C.R. Reid, Utah State University
	3:30-3:45 p.m.	**SUNDERLAND DAIRY MANURE DIGESTER RETRO FIT: LEADERSHIP, ALTERNATIVE ENERGY, AND RESEARCH** J.A. Gale, Utah State University
	3:50-4:05 p.m.	**LOST RIVERS GRAZING ACADEMY: BUILDING SUDSTAINABLITY IN LIVESTOCK PRODUCTION** C. Cheyney, University of Idaho
	4:10-4:25 p.m.	**FRIDAY FUN NIGHTS: LIVESTOCK JUDGING CLINICS** R.L. Wilson, University of Idaho

Western Region Extension
PROFESSIONAL IMPROVEMENT CONFERENCE

PRESENTATION SCHEDULE

SESSION II (Room 2)		
AGRONOMY	**9:00-9:15 a.m.**	**NORTHERN UTAH NUTRIENT SURVEY 2008** J.V. Barnhill, Utah State University
	9:20-9:35 a.m.	**GROWING SWITCHGRASS IN SOUTHWEST UTAH** M. Nelson, Utah State University
	9:40-9:55 a.m.	**HERBICIDE EVALUATIONS FOR SEDGE (CYPERUS ROTUNDUS, KYLLINGA BREVIFOLIA, K. NEMORALIS) AND WEDELIA (W. TRILOBATA) CONTROL** N.M. Nagata, University of Hawaii
	10:00-10:15 a.m.	**THE RESPONSE OF CRESTED WHEATGRASS (Agropyron spp.) SEEDLINGS TO SIX HERBICIDES** B.W. Schultz, University of Nevada
	10:15-10:30	**BREAK**
	10:30-10:45 a.m.	**HERBICIDE SELECTION FOR CONTROL OF TALL LARKSPUR (Delphinium occidentale) IN SOUTHWESTERN MONTANA** R. Carlstrom, Montana State University
	10:50-11:05 a.m.	**MONITORING OF ERGOT (*Claviceps purpurea*) ASCOSPORE RELEASE TO BETTER TIME FUNGICIDE APPLICATION IN NE OREGON GRASS SEED PRODUCTION** D.L. Walenta, Oregon State University
	11:10-11:25 a.m.	**ON-FARM TESTING IN TODAY'S ENVIRNOMENT TO SOLVE AGRONOMIC AND PEST MANAGEMENT PROBLEMS.** A.D. Esser, Washington State University
	11:30-11:45 a.m.	**ALFALFA TOLERANCE TO FLUMIOXAZIN IN ARIZONA** E.L. Taylor, University of Arizona
	11:45-1:00 p.m.	**LUNCH**
	1:00-1:15 p.m.	**WILLOW CREEK WINTER WHEAT SEED PRODUCTION SURVEY** J.P. Tanner, Montana State University
	1:20-1:35 p.m.	**EVALUATING CORN SILAGE DENSITY MEASUREMENT TOOLS** S.L. Hines, University of Idaho
	1:40-1:55 p.m.	**FORAGE OBSERVATION PLOTS HELP PRODUCERS IDENTIFY GRASSES AND LEGUMES** S.J. Filley, Oregon State University
	2:00-2:15 p.m.	**YIELD AND QUALITY OF COMMERCIALLY AVAILABLE TEFF GENOTYPES IN THE PACIFIC NORTHWEST** O.S. Norberg, Oregon State University
	2:15-2:30 p.m.	**BREAK**

NATURAL RESOURCES	**2:30-2:45 p.m.**	**ASSESSING DROUGHT CONDITIONS AND ACCESSING FEDERAL DROUGHT RELIEF IN EASTERN OREGON DURING THE SUMMER OF 2007** C. Parsons, Oregon State University
	2:50-3:05 p.m.	**PROGRAM FOR SMALL ACREAGE STEWARDSHIP RESULTS IN IMPLEMENTATION OF LAND MANGEMENT PRACTICES** M.A. Fery, Oregon State University
	3:10-3:25 p.m.	**SATELLITE TECHNOLOGY PROVIDES REMOTE SENSING OPPORTUNITIES FOR LIVESTOCK PRODUCERS IN TRACKING WATER SUPPLIES** T.L. Deboodt, Oregon State University
	3:30-3:45 p.m.	**REMOTE SENSING DIGITAL IMAGERY AND SITE-SPECIFIC AGRICULTURE APPLICATIONS** P.G. Carter, Washington State University
	3:50-4:05 p.m.	**IRRIGATION SYSTEM EFFICIENCY COMPARISON IN THE UPPER SEVIER WATERSHED** K.M. Heaton, Utah State University

Western Region Extension
PROFESSIONAL IMPROVEMENT CONFERENCE

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AGRONOMY

NATURAL RESOURCES

EXTENSION PROGRAMMING

FARM SUCCESION AND ESTATE PLANNING WITH PERSONAL COACHING FOR PARTICIPATING FAMILIES

Tuck,* B.[1], Roberts, D.[2], Kerr, S.[3], Corp, M.[4], Mills, R.[5], Fouts, J.[6], Esser, A.[7], and Viebrock, M.[8]

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Succession planning is a challenging but necessary process for most farm families. To increase farm clientele's skills in this area, county faculty from Oregon State University (OSU) and Washington State University (WSU) Extension conducted a farm succession planning educational program in eastern Washington and Oregon. The program was funded by the Western Center for Risk Management Education and USDA-CSREES. From 2006 to 2008, OSU and WSU Extension faculty held a series of three farm succession planning workshops at each of six locations across the region. Participation in these workshops greatly exceeded expectations with 40 to 60 participants at each workshop. Workshop topics included reasons to develop a farm succession plan; communicating successfully with all family members involved; identifying appropriate professional input; an overview of relevant state laws; discussion on estate laws and writing wills; conducting successful family meetings; overcoming difficulties encountered in the process; making good use of attorneys' time; specifying inheritance of treasured personal items; protecting the business in the event of a sudden death; and getting motivated to develop a farm succession plan. The 90 families who committed to developing a succession plan received free coaching throughout the project. All coaches had experience in business and/or finance and were hired and trained by WSU. They contacted client families on a regular basis to encourage them through the succession planning process, to assist with goal-setting and to facilitate family meetings. To date, 10 farm families have completed farm succession plans and many others are in progress.

BRIDGING THE URBAN - RURAL DIVIDE

Delaney*,G.D[1], and Hosty, M.E.[2]

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As the effects of urbanization accelerate in many parts of the world, impacts on the environment along the urban-rural interfaces have emerged. Oregon communities are among those that are rapidly changing and the urban-rural divide is especially pronounced in regards to how youth and adults feel their natural resources should be managed. In order to effectively make decisions about natural resource management youth and adults must first gain a platform of knowledge on which to base their decisions. A program where middle school youth from Portland, Oregon could experience ranch life in Grant County, Oregon provided pieces of that platform and helped bridge the divide between urban and rural by bringing youth and adults from both sides of the state together. Twenty middle school youth were selected for the program. Students were placed in teams of two with Grant County ranch families. All ranch families were screened and background checks conducted. The summative evaluation sought input from adult leaders, teachers and students to assess the program in several key areas: 1) change in attitudes regarding urban/rural natural resources management; 2) the experience of participating in the exchange; and 3) how they have changed as a result of the experience. Students reported significant attitude changes in seven areas. Examples of the changes, as stated by the students, include: I am more open to accepting different ideas; I know more about ranching and will understand and listen more; Don’t be quick to judge something, take some time to learn about it; Seek to find common ground instead of focusing on differences.

JUAB COUNTY SAFETY CERTIFICATION PROGRAMS

Banks, J.E.

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Youth of Juab County enjoy a wide variety of recreational activities because of the location and physical attributes of the county. Some of the activities include shooting sports, off highway riding and snowmobiling. Riding an off highway vehicle or snowmobile can be an enjoyable and rewarding outdoor sport. On the other hand, reckless or otherwise unsafe use can result in a dangerous and destructive experience for both people and the environment. Hunting and shooting sports are also popular activities in the county. Experiencing the outdoors by participating in different types of shooting programs can be fun and exciting. The goal of the Juab County 4-H sponsored off-highway vehicle and snowmobile certification programs are to teach youth the skills needed to use the machines the right way, making the sport fun and safe. The basic goal of the Juab County 4-H sponsored hunter safety certification program is to teach youth the essential skills to produce safe and ethical hunters. For the past 10 years, the Extension office has partnered with different agencies in sponsoring these certification programs. As a result, in the past five years 265 youth have received their Utah Off- Highway Vehicle (OHV) certification and 528 youth have received their Utah Hunter Safety Certification. Also in the past two years, 16 youth have received their Utah Snowmobile certification.

COMPOSTING SCHOOL – MATERIALS AND METHODS

de Haro Martí* M.E[1]., Robbins J.A.[2]

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Composting organic waste is an environmentally sound technique used around the world. Several studies have demonstrated the benefits of compost as soil amendment, sustainable waste treatment, and sound agricultural practice. Stakeholders in Southern Idaho are bringing questions to Extension regarding composting and how to compost at home, on small farms, dairies, and other operations. The "Composting School – Materials and Methods" was developed to answer those questions and to teach stakeholders diverse composting techniques. The school included two sessions that were conducted at the Gooding County Extension Office in late summer and early fall 2008. Two novelties made this course different from others offered in Idaho. First, the targeted audience was very heterogeneous including home owners, small farmers, and owners of horses, llamas, hogs, and dairy facilities. The second idea included a hands-on section addressing composting techniques. After receiving theoretical training about composting techniques, participants had the opportunity to build different systems for home, on-farm, and worm composting on site. During the second session participants received a deeper overview of on-farm and general composting and continued with the hands-on section by turning the piles and analyzing the performance of the different composting techniques built during the first session. Between both sessions a total of 42 participants assisted. Preliminary information shows that 50% of respondents learned "a great deal". Eighty-eight percent of respondents answered they will adopt two or more techniques not used before attending the school. Further data summary will allow educators to evaluate the impact of this school.

LESSONS FOR LANDOWNERS LEASING RIGHTS FOR WIND-POWERED ENERGY GENERATION

Macnab, S.

Extension Agent, Oregon State University Extension Service, Sherman County, Moro, Oregon 97065

Wind energy has become a popular alternative for landowners and farm managers in areas featuring sustainable winds, power transmission capacity and a willing populace to accept changes to their landscape and farming patterns. While this industry contributes significantly to local and personal economies, there are issues that landowners need to consider in working with these lessees. Conservation efforts, second nature to the land manager, may not be as evident to contractors. Farming and traffic patterns will change. Demands on services also increase and new questions face landowners and local governments. Many issues were addressed in a pre-leasing workshop, (leading to an increase in land for wind towers from 16 in 2002 to 300 today) while others have been learned from practical experiences. This presentation addresses many of the issues (protecting conservation structures, weed control, managing compaction, controlling unwanted uses and user's access) and resolutions addressed in Sherman County, Oregon, a rural county located in North Central Oregon along the Columbia River with a growing wind energy producing industry.

IDAHO'S DISTRICT III 4-H DAY CAMPS – SOMETHING FOR EVERYONE

Kinder* C.A.[1], Gillespie D.R.[2]

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The American Camp Association youth development study found that overnight camps benefit children many ways including; increased self-esteem, social skills that help make new friends, leadership, and becoming more willing to try new things. The study also showed that camping experiences give youth a measured growth in four areas; positive identity, social skills, physical and thinking skills, and positive values and spirituality. But what happens if youth don't get the chance to attend summer camp? Can these same life skills be developed at day camps? The District III 4-H Team gives youth a variety of camping opportunities: 2007 and 2008 camps included many day camps, multiple day camps and weeklong camps. Camp opportunities range from ATV, cooking, wildlife, dairy, lamb, swine, livestock judging, and traditional summer camps. The District III Summer Camp Book was created to reach new youth audiences. Each year one thousand copies of the Summer Camp Book are distributed through Extension Offices, libraries, schools, city recreation organizations, and other youth agencies. Attendance at the day camps ranged from 20 to 150 depending on subject matter and facilities. The Idaho 4-H Life Skill Evaluation was conducted at the 2008 camps for the following life skills; positive identity, communication, and useful/marketable skills. Surveys indicate there was a slight increase in the scores of the selected life skills as a result of youth participating in our day and week long camps.

HORTICULTURE

DEVELOPING RESOURCES TO HELP URBAN FOREST PROFESSIONALS PROPERLY IDENTIFY AND TREAT COMMON ABIOTIC STRESSES IN WOODY ORNAMENTALS

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Trees make up the backbone of home landscapes and create our urban forest that surround our communities and improve our quality of life. However, improper maintenance, poor selection of plant material, temperature extremes, mechanical damage, and other abiotic problems often lead to unnecessary plant stresses. Symptoms of these stresses are often misdiagnosed and improper control measures implemented, which leads to unnecessary pesticide applications, wasted financial resources, and frustrated homeowners and professionals. In an effort to improve diagnosing abiotic tree stresses, a training program was developed to teach professionals and diagnostic volunteers key symptoms to help identify and properly treat abiotic problems. A major part of the annual urban forestry training was dedicated to teaching proper identification and treatment of abiotic stresses. A 'Top Ten' poster was developed and given to each participating community to help urban foresters and park professionals in identifying these problems. This poster was made into a fact sheet for use by professionals, Extension agents, and homeowners. A PowerPoint presentation was also developed to assist Extension agents and other professionals in future trainings. The impact of the training, poster, fact sheet, and presentation is more professionals and diagnostic volunteers properly identifying abiotic stresses which in turn will reduce unnecessary pesticide usage, insure proper tree selection, and improve tree health and their ability to withstand insect and disease pressure.

THE “DON’T BUG US CAMPAIGN” IN UMATILLA COUNTY, OREGON

Kaiser, C.

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The fruit industries in the Walla Walla Valley of Umatilla County generate some $85 million per year. Codling moth, apple maggot and cherry fruit fly constitute major obstacles for plant quarantine both nationally and internationally. Indeed, in 2004, the “third strike” for codling moth in Taiwan came from fruit produced in the Milton-Freewater area. This shut down the entire USA apple market prematurely and the Northwest Horticulture Council estimated this cost the Pacific Norwest an estimated $26 million in lost revenue and more importantly, this was in the form of foreign exchange. Local fruit growers have been running a codling moth mating disruption program (CAMP) for the last 10 years and clear evidence exists that proves that orchards bordering on the city of Milton-Freewater have the highest infestation of codling moths. This is due mostly to pressure from untended and unsprayed home garden fruit trees. Extension has mounted a program to educate the public to take care of their home garden trees and, in conjunction with County Commissioners and City Council, has had an ordinance passed that implement a Pest Control Board and partially funds a Pest Control Officer for enforcement of this abatement. The program has been successful in removing more than 300 infested fruit trees to date and aims at improving grower management of these orchards in close proximity to the city.

A REGIONAL APPROACH TO MASTER GARDENER AND HORTICULTURE TRAINING IN SOUTHEASTERN WASHINGTON AND NORTHERN IDAHO

Heitstuman, M.D.

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There is a need for Master Gardener and horticulture training in the rural areas of Southeastern Washington and Northern Idaho. County Extension faculty time, expertise and resources are limited and it is difficult for individual counties to offer such training. The area is unique, however, in that two land-grant universities are located within a 40-mile drive of Clarkston, WA. A regional training class encompassing a 60-mile radius of the Lewis-Clark Valley has been offered in even-numbered years since 2002. Fees generated by the course are used to support the host Asotin County Master Gardener Program. Individuals that become Master Gardener volunteers receive a 50% refund on the course fee after they give back 40-hours of service to their local Extension Office. In 2008, 60-hours of intensive training were provided to 65 participants from 6 different counties. Classes were held each Tuesday afternoon from January through April. Course instructors included 10 faculty from 6 different WSU and UI departments; 4 county-based faculty; and local nursery owners, Master Gardeners and weed board coordinators. One hundred percent of the participants said the information provided during the course increased their personal knowledge of horticulture and would positively impact their ability to serve as Master Gardeners. Approximately 70% indicated that they plan to become Master Gardeners. By combining resources and utilizing a joint approach to training, county Extension Offices have been able to offer a high quality class that meets the needs of their local clientele. Plans are to hold joint training again in 2010.

CERTIFIED OREGON LANDSCAPES, A SUSTAINABILITY CHECKUP

Renquist, S.B.

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Over the past two years Extension agents from around Oregon have been developing "WaterWise" programs that encourage water conservation and water quality protection. As part of this working group I became aware of our clientele's interest in attaining a broader understanding of sustainable landscape topics. After being introduced to a successful program in Florida called Florida Friendly Landscaping, I developed a sustainability checkup worksheet suitable for Oregon residents. During the first year of the program I tested the worksheet concept with Master Gardeners in Douglas County, and later with other Oregon Master Gardeners at Mini-College in Corvallis. Master Gardeners helped me refine the worksheet to make it easier for the general public to understand. The worksheet covers nine categories including water efficiency, mulch, recycling yard waste, wildlife, yard pests, right plant in the right place, fertilization, storm water runoff, and stream side management. Each category on the worksheet has several sustainable gardening practices listed under it with possible point totals clients can earn. Scoring 50 points or more on the worksheet allows you to request a certification checkup with the agent or Master Gardeners. If verified the client is issued a Certified Oregon Landscape certificate or sign. The process of walking through the landscape while filling out the worksheet has proven to be a very effective educational tool. The worksheets refer clients to additional published materials, encourage interaction with our Master Gardeners at their clinic, and give homeowners an overall view of sustainable gardening practices.

CURLY TOP RESISTANT TOMATO VARIETIES FOR SOUTHERN UTAH

Heflebower*, R.[1], Reid, C.[2], Winward, D.[3],Washburn, C.[4]

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Curly Top is a virus disease which causes wilting and death of tomatoes and other vegetables. Tomato losses have been reported as high as 80% in southern Utah. Curly Top is an insect vectored virus that is thought to be transmitted by the beet leafhopper (Circulifer tenellus). Control with chemical sprays is extremely difficult since the timing of when the beet leafhopper moves into tomato fields and home gardens varies from year to year.

In 2007 we selected two curly top resistant tomato varieties to compare with other popular varieties. The varieties Columbian and Row Pack, from Washington State University, are thought to be curly top resistant. They were compared to Jet Star, Early Girl, Better Boy, Mountain Fresh and Celebrity for disease resistance, yield, fruit size, pH and eating quality. The resistant varieties, Row Pack and Columbian, showed symptoms of Curly Top and in some cases the plants lived but were stunted. Tomato fruit size on the resistant varieties was generally smaller than the traditional types. None of the yields from any of the varieties tested were significantly different from each other in yield or disease resistance. Jet Star ranked highest for flavor followed by Celebrity, Celebrity Supreme, Row Pack, and Columbian in that order. The pH for the varieties tested ranged from 3.7 to 4.4, meeting the requirement of being less than 4.7 to process without the use of lemon juice.

ANIMAL SCIENCE

PARTICIPATORY EXTENSION PROGRAMMING

Riggs*, B.[1], Johnson, D.D.[2]

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Historically, feed has comprised 60% percent of total production expenses for cow/calf operations in the United States. Feed costs have dramatically increased recently, substantially impacting the profitability of the cow/calf industry. We identified a need for extension programming that provided cow/calf producers with the process, tools and information necessary to improve management decision-making for the purpose of lowering operating costs through more efficient use of feed resources. We conducted a pilot extension program that utilized a participatory format at two locations in central and eastern Oregon involving multi-disciplinary specialists with expertise in beef cattle nutrition and management, rangeland ecology and management, and forage management. Two operations and their associated feed resources were presented as case studies for students to gain experience using decision-making tools in a process for evaluating the economic consequences of different feeding alternatives. Other operations' scenarios were voluntarily provided by class participants as time allowed. Our objective was to have participants actively work through a common decision-making process to determine the best alternative for each operation's scenario. The team of specialists facilitated discussion of alternatives and provided technical assistance to participants while they practiced problem solving. Lecture was strictly avoided. Our primary goal was to develop a high quality participatory program that could be adapted to diverse issues, locations and audiences. One month after the program, one-third of the participants reported implementation of some of the demonstrated decision making tools. Ranchers invited the team to conduct a third program at another location and requested more extension programming using the same format.

THE CHALLENGES ASSOCIATED WITH DEVELOPING AN AIR EMISSIONS CONTROL PROGRAM FOR THE OREGON DAIRY INDUSTRY

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The 2007 Oregon Legislature passed a senate bill which changed Oregon law to allow for the regulation of air emissions from agriculture. The bill also created a task force representing environmental, human health and dairy industry perspectives and charged it with studying the emissions from dairy operations, evaluating available alternatives for reducing emissions, and making recommendations about future regulations. The Task Force met seven times from January through June 2008. It studied, explored, and debated the current state of the science, regulatory frameworks outside of Oregon and various options. The Task Force made recommendations and set timelines for regulations that included the use of Best Management Practices (BMP's) to address the emission concerns of ammonia, methanol and odor. Oregon State University Extension has developed a menu of BMP's producers can select from in the areas of 1) Waste storage and treatment options, 2) Animal nutrition options , 3) Land application practices, and 4) Freestall and lot practices. Many challenges exist in developing BMP's from determining specific emission reductions or effectiveness to prioritizing which of the three targeted emissions to focus on. The first few years of the program will include dairy producer educational programs, voluntary adoption of BMP's and monitoring and documenting producer participation. A mandatory regulatory program on air emissions in Oregon is scheduled to go in place in 2015.

EQUINE MANGEMENT THROUGH A TRIBALLY OPERATED ANNUAL HORSE SALE ON THE WARM SPRINGS INDIAN RESERVATION

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Equine management on the Warm Springs Indian Reservation in central Oregon has become increasingly challenging as market conditions for horses have declined in the last ten years, now magnified by the current ban on horse slaughter. This year, the local auction stopped accepting loose horses for sale. Prior to that, horse prices were not motivating tribal members to gather loose horses from off of the range. The increase in horse numbers has led to degraded range conditions, and is a concern for the community. Although horses are an important cultural resource for the Warm Springs Tribe, they also acknowledge that equine management is essential for resource health. In 2003, Extension worked with the tribal Range and Agriculture department to initiate a tribally-run and operated horse sale with direct marketing to the public. The goal was twofold: to gather cull stallions for herd improvement and management, and to showcase yearlings and colts. In 2008, the sixth annual horse sale was held in Warm Springs. Over the years, 653 horses have been sold. 38% have been stallions. The sale has lead to a new and better working relationship between tribal members and has become a focal point of activity for the community. In addition, Extension has been able to utilize the yearly event to work with USDA in obtaining information on the open range animals. Coggins testing and mineral testing of equine blood has provided an increase in physiological knowledge of these animals and allowed Extension to further our outreach education within the tribal livestock community.

CEDAR LIVESTOCK AND HERITAGE FESTIVAL – A CELEBRATION OF AGRICULTURE AND OUR HERITAGE

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Iron County is built on a foundation of farming and ranching which makes the community strong and healthy in a variety of ways. In addition to being a major economic factor, farming and ranching was key in establishing – and is a key to maintaining – a strong work ethic, good family values, open space and in making Iron County a great place to live. Recently construction of a new Wal-Mart interfered with a historic livestock trail that has been used continuously for over 120 years. This resulted in hard feelings and conflicts between the developer, Cedar City and local ranchers. To help alleviate these hard feelings, the author initiated and serves as Chairman of Cedar Livestock & Heritage Festival which is an annual event. The festival features a premier stockdog competition, Dutch oven cooking contest, live music and entertainment. The key event is a parade with tractors, wagons, horses, over 30 historic sheep wagons and other western heritage entries. The final and most anticipated entry is 1,200 sheep parading down Main Street in Cedar City, following their historic route from mountain summer ranges to valley winter ranges. In 2007 the festival raised over 50,000 dollars and was attended by approximately 3000 people. The third annual festival will be held in late October of 2008 and will be bigger and better than ever with the addition of an antique tractor show and pull and a large quilt show. This festival educates the public about agriculture and our heritage, adds to community spirit and in addition, infuses a significant amount of money into the local economy.

SUNDERLAND DAIRY MANURE DIGESTER RETRO FIT: LEADERSHIP, ALTERNATIVE ENERGY, AND RESEARCH

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In 2004 Utah State University entered into a contract with Sunderland Dairy Farms to install recently developed and patented animal manure digestion technology. Induced Blanket Reactor (IBR) technology was developed by a campus based agricultural "high tech" research program and was licensed to a new company spun-off from the university. IBR gained significant publicity as a high tech approach to improve animal manure digestion technology and to develop alternative agricultural energy sources. Proponents claimed significantly higher efficiency and shorter retention time as benefits over traditional digestion technology. The technology had not been adequately researched, was prematurely licensed, and inappropriately marketed by the company as turnkey technology. The company lacked capital, expertise; capacity and motivation to effectively trouble shoot and promote IBR technology and the university was initially unaware of the problems. Consequently the digester was not completed due to a variety of circumstances. Owners prepared for legal proceedings to recover damages. Project failure by the university and the company damaged relationships with the cooperator, federal, state and private agricultural organizations. USU Extension had not been involved in technology development or the project but intervened in April of 2007. Extension and is providing leadership and on site project management to change the outcome of the project, repair relationships and conduct additional research. Extension intervention initiated administrative corrective actions. Extension helped identify engineering design flaws, formulate retrofit plan, obtain retro-fit funding ($243,000), repair relationships with cooperators, and initiated a Utah Science Technology and Research (USTAR) project.

LOST RIVERS GRAZING ACADEMY: BUILDING SUSTAINABLITY IN LIVESTOCK PRODUCTION

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The Lost Rivers Grazing Academy (LRGA) was developed to improve the sustainability of livestock grazing operations. The LRGA teaches operators the principals of Management-intensive Grazing (MiG) in multi-day, hands-on workshops which have been presented across southern Idaho and has hosted participants from 12 states, Canada and Mexico. Irrigated pasture is often relegated to marginal soils, deemed of less value and consequently receives minimal management, leading to season-long grazing. According to Gerrish and Roberts (1999) pasture grazed longer than 30 days at a time has a harvesting efficiency of 40% or less. High stocking rates and low stock densities are common, leading to severe grazing, which limits re-growth rate and annual yield. MiG is a goal driven, flexible method of managing grazing for improved sustainability. Inputs for the LRGA workshops include Extension faculty, multi-source grant funding, including topic team and Environmental Quality Incentives Program (EQIP), fence-aware cattle, electric fencing equipment, and pasture and grazing reference materials. Teaching is by classroom instruction, experiential learning, games and simulations. Outputs include thirteen four day grazing schools since September, 2000, development of an Idaho pasture stick, impact statements, poster presentations and popular press articles. In a survey, LRGA participants indicated they have improved the sustainability of their operations by better management of the carbon, nitrogen, and water cycles which has led to more acres in managed grazing systems, increased forage production per acre, improved forage utilization, improved pasture composition and greater carrying capacity, and reduced winter feed costs, leading to greater economic stability and profitability.

FRIDAY FUN NIGHTS: LIVESTOCK JUDGING CLINICS

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"Livestock judging is a source of youth development for beneficial life skills such as; communication, decision-making, problem solving, self-motivation, teamwork and organization" (Nash, S.A. & Sant, L.L. Journal of Extension. 2005). Gem County has held a Livestock Judging Contest for over 20 years during the county fair. In the past few years, participation in this contest has been declining. To remedy this problem we held Friday Fun Nights: Livestock Judging Clinics monthly during April, May and June to teach the benefits and skills of livestock judging. The clinics were designed to educate youth on how to evaluate each livestock species as well as give oral reasons. The goals and objectives were explained at the beginning of each clinic. Objects were used such as shoes, hay, and crackers to introduce judging techniques. At the completion of judging, participants practiced oral reasons. The average number of participants each night was 35 youth from 4 different counties. On average, clinic participants increased their overall knowledge of Livestock Judging by 43% according to pre and post test scores. As a result of the Judging Clinics, the Gem County Livestock Judging Contest increased participation by 14 youth members. The average scores for the senior age division increased 6% and the average scores from the junior division increased 8%. Due to the success of the workshops, more kids are interested in participating with the traveling livestock judging teams to attend the State Livestock Judging Contests.

AGRONOMY

NORTHERN UTAH NUTRIENT SURVEY 2008

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Extension Agents are frequently asked which nutrients producers should have a soil analysis completed for. Agents haven't had data on the frequency of minor nutrient deficiencies, so it was difficult to make an informed determination of which if any of them should be included in the analysis. This survey of 34 established alfalfa fields in eight northern Utah counties was completed to determine if there were significant secondary and micro-nutrient deficiencies occurring. The number of fields sampled in each county was determined by the number of irrigated crop acres. Extension staff in each county collected soil and tissue samples from alfalfa fields just before hay cutting took place. GPS coordinates for each field were also collected so that field distribution, and thus deficiencies, could be mapped. The samples were analyzed for 15 nutrients. The soil analyses revealed that over 25 % of the fields were deficient in P, K, S and B. Other nutrients that were identified as deficient at a reduced frequency were Zn,Cu, Mn, and Ni. The results of the soil and tissue analyses did not always correlate since most samples were taken just before 1st cutting and the plants had utilized the nutrients which had mineralized from the soil over the winter leaving the soil depleted, but the tissue exhibiting adequate levels.

GROWING SWITCHGRASS IN SOUTHWEST UTAH

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Switchgrass (Panicum virgatum) is a summer perennial grass that is native to North America. It grows well in hot wet climates and has always been well-liked as forage for livestock grazing, haying and wildlife habitat. Switch grass fame especially sky-rocketed after it was mentioned in President Bush's 2006 state of the Union address in reference to being used for the ethanol process. I was contacted by a company wanted to plant 4000 acres of Switch Grass in western Beaver County and use it to make ethanol. It was very questionable if switch grass would grow in Beaver County so we decided to set up a trial. In May 2007 we planted 4 varieties of Switch grass in 10 replications. Early on in the trial we had a lot of weed problems so we mowed the plots 3 times to help control the weeds. We found that the Switchgrass was very hard to establish. In the summer of 2008 we were unable to water the plots and found very quickly that some of the switchgrass that actually was established the first year will not grow in our county without irrigation. We concluded that there are better crops adapted to our growing conditions in Beaver County.

HERBICIDE EVALUATIONS FOR SEDGE (CYPERUS ROTUNDUS, KYLLINGA BREVIFOLIA, K. NEMORALIS) AND WEDELIA (W. TRILOBATA) CONTROL

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In Hawaii, sedges such as purple nutsedge (Cyperus rotundus), green kyllinga (Kyllinga brevifolia) and white kyllinga (K. nemoralis) are common weeds in turfgrasses and landscapes. Wedelia trilobata, an ornamental broadleaf groundcover can also become invasive in certain situations. Sulfonylurea (Certainty, Sedgehammer, Monument) and imidazolinone (Image) are selective herbicides for controlling sedges and certain broadleaf weeds. In February 2008, four field trials were conducted with these herbicides and weed spp. Tests were arranged in randomized complete blocks with 4 replicated, 2' x 3' plots. Certainty (1.25 oz/acre), Sedgehammer (1.38 oz/a), Monument (0.53 oz/a) and Image (1.4 gal/a) were applied with a MeterJet sprayer. Spreader 90 at 0.25% was included in sulfonylurea treatments and controls. On purple nutsedge, Certainty provided 95% control, followed by Sedgehammer and Monument (92.3%), then Image (45.7%). On green kyllinga, Sedgehammer (50%), Certainty (47.6%), Monument (36.9%) and Image (29.4%) gave some level of control. On white kyllinga, Monument (56.3%), Certainty (46.2%) and Sedgehammer (34.5%) provided some control, whereas Image was ineffective. On wedelia, Monument (95.2%), Certainty (91.7%), Sedgehammer (89.7%) and Image (73.6%) were highly effective. A field day was held for 25 stakeholders in April. A survey of 19 people indicated their knowledge on sedge control increased by 59.2% and wedelia by 85%; said the results were extremely relevant (91% rating) to their work and wanted these types of projects to continue. Fifteen people plan to use the information within 6 months, 3.5 individuals will use it sometime in the future, and 0.5 people were unsure. Hawaii pesticide and Golf Course Superintendents recertification credits were also provided.

THE RESPONSE OF CRESTED WHEATGRASS (Agropyron spp.) SEEDLINGS TO SIX HERBICIDES

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Following wildfires in the sagebrush zone, crested wheatgrass (Agropyron spp.) is often seeded on sites that lack a perennial herbaceous understory and cheatgrass can readily establish. Following a large wildfire on a degraded Wyoming sagebrush site in July 2007, three varieties of crested wheatgrass were seeded in early December 2007. Chemical control of cheatgrass is possible but the effect of many herbicides on emerging or recently emerged crested wheatgrass is largely unknown. Six herbicides (glyphosate, imazapic, metribuzin, propoxycarbazone, sulfometuron, and sulfosulfuron), alone or in combination or at several rates, were applied to the seeded area in either early March (one leaf to pre-emergent) or mid-April, 2008. We assessed the short-term effect of each treatment on the crested wheatgrass seedlings by measuring the height of up to ten seedlings in each treatment plot and the total density of crested wheatgrass seedlings in a 1 x 9-m belt transect. Compared to an untreated control, the early-March treatments resulted in much shorter seedlings for most treatments, and particularly for imazapic and sulfometuron. Seedlings treated in mid-April were usually taller than seedlings treated in early March, but shorter than seedlings in the control plots. Plots treated with metribuzin, plateau and sulfometuron had substantially fewer seedlings than the control plots regardless of when they were treated. Sulfosulfuron had a small negative effect on seedling height and no effect on seedling density, regardless of time of treatment.

HERBICIDE SELECTION FOR CONTROL OF TALL LARKSPUR (Delphinium occidentale) IN SOUTHWESTERN MONTANA

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Tall Larkspur (Delphinium occidentale) is a poisonous native plant found in mountain regions of southwestern Montana. Producers grazing in tall larkspur infested areas report losing 2% or more of their beef cattle each grazing season. Impacts of poisoning can vary from year to year. Economic losses in the 9 county region of Southwestern Montana are estimated to range from $500,000 to $1 million from cattle poisoning by tall larkspur each year. Timing grazing in the late summer/early fall to coincide with larkspur maturity has been the most effective way for producers to manage animal mortality thus far. However, grazing that coincides with lower toxicity periods in the plant growth cycle does not occur at the most advantageous period for proper range management. Some work has been done to reduce larkspur populations with herbicides; the recommendations from this work utilize high rates of herbicides. This study consisted of a replicated complete block design with individual plots randomized for herbicide rates and application timing. Individual plants within plots were counted prior to herbicide application and for 2 years following application to determine the percent control and efficacy of treatments. Applications were made utilizing a CO2 backpack sprayer with a 6 foot boom. Sprayer was calibrated for an application rate of 13 gallons per acre. Plot sizes were 6 feet wide by 25 feet long, with a 4 foot edge between plots to reduce edge effect. Control varied between active ingredient used and tall larkspur growth stage. The top three results with 97% control or better were; Escort at 1 oz/acre in the vegetative stage, Cimarron X-tra at 1 oz/ac in the vegetative stage and Cimarron X-tra at 1.5 oz/acre in the vegetative stage.

MONITORING OF ERGOT (*Claviceps purpurea*) ASCOSPORE RELEASE TO BETTER TIME FUNGICIDE APPLICATION IN NE OREGON GRASS SEED PRODUCTION.

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Ergot (*Claviceps purpurea*) is an important floral disease of grasses, characterized by the conversion of seed into elongated black sclerotia. In grass seed production fields, seed yield losses result from the direct replacement of seed with sclerotia, and during recleaning of seed to remove the sclerotia to meet seed certification standards. In recent years, ergot incidence and severity has increased in perennial ryegrass fields near Hermiston, OR. To better understand the host and environmental factors that contribute to ergot development, soil moisture conditions, timing of host flowering, and airborne ascospore density of *C. purpurea* were monitored in two fields of Kentucky bluegrass fields near LaGrande, OR, and one field each of Kentucky bluegrass and perennial ryegrass near Hermiston, OR during 2008. The locations differ in elevation and soil moisture holding capacity. The field sites were established in areas of known ergot occurrence. Burkard volumetric spore traps were used to monitor airborne ascospore densities. Currently, one or more applications of fungicides are used to lower ergot infections at anthesis, without regard to ascospore release. Because soil moisture is required for sclerotial germination and production of ascospores, soil moisture conditions may be used to predict the occurrence of ascospores of *C. purpurea* relative to flowering in grasses. Anticipated results from the study will be used to develop an IPM approach to reduce ergot losses through timing of fungicide applications, based on timing of host flowering and ascospore occurrence.

ON-FARM TESTING IN TODAY'S ENVIRNOMENT TO SOLVE AGRONOMIC AND PEST MANAGEMENT PROBLEMS.

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The value of on-farm testing has long been documented within Extension, and it remains an important method to solve today's agronomic and pest management issues. On-farm testing is not research managed small plots on farms, nor is it a single strip or split field comparison. It is replicated, statistically valid research with field trials established and managed by the growers with field scale equipment. With the incorporation of technology and the need to get bigger, grower's field scale equipment has changed rapidly over the past few years. Guidance systems, variable rate controls, grain yield monitors, semi trucks, and bank-out wagons are just a few examples that have changed the landscape of traditional on-farm testing. Living in today's "information age" has also impacted on-farm testing with the need for more rapid accurate results to keep up in this ever changing environment. This presentation will focus on the basic steps to successfully implement an on-farm test, and will also concentrate on adopting methods for today's modern agriculture of bigger, more technical grower owned and operated field scale equipment.

ALFALFA TOLERANCE TO FLUMIOXAZIN IN ARIZONA

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Chateau® (flumioxazin) was evaluated for weed control and phyto-toxicity effects on an alfalfa field in Coolidge, AZ during the summer of 2007. Treatments that were evaluated included Chateau® at 2, 3, and 4 oz/A with follow-up treatments at 2, 3, and 4 oz/A 30 days after initial treatment. Evaluations were also made with Chateau® at 8 oz/A and Chateau® at 2 and 4 oz/A tank mixed with Select Max at 24 oz/A and a non-ionic surfactant at .25% v/v; Prowl H2O at 3 pts/A and a non-ionic surfactant at .25% v/v. The Chateau® treatments at 2, 3 and 4 oz/A were in a randomized complete block replicated 4 times, while the tank mixes and Chateau® at 8 oz/A were used as an on site demonstration. Evaluations were taken at 4, 7, 14 and 21 DAT for phyto-toxicity levels. Due to lack of weed pressure it was only noted that there was suppression in sprangle top weed control during the first 30 days across all treatments. Phyto-toxicity to alfalfa was observed in all treatments and fell above the acceptable rate for commercial production. However, all treatments recovered from damage after 28 days and no effects were seen after cutting.

WILLOW CREEK WINTER WHEAT SEED PRODUCTION SURVEY

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Montana livestock producers use annual forages widely. Montana State University has been evaluating different annual forage species for feed value and viability in Montana. One of the promising annual forages is 'Willow Creek' winter wheat. This is an awnless forage winter wheat that can be produced for hay and possibly spring pasture. Willow Creek is a tall variety which matures later than, current winter wheat varieties. While originally released as potential dual-purpose (hay or grain) wheat, the largest limitation to this new variety is its low grain production. In short, as Willow Creek has entered seed production channels, it appears to be similar to the previous situation with 'Haybet' barley – a good forage variety with low grain (seed) potential. A statewide survey was conducted with producers who grew Willow Creek seed in 2007 to determine their experience in growing this annual forage. The number of acres varied from 20 acres planted to as many as 110 acres. Eighty-Eight percent of the producers said they would grow Willow Creek winter wheat again as a seed crop. It has slightly lower quality than hay barley, but in animal feeding trials (back grounding) appears to be better then triticale. Willow Creek is a high-yielding forage. The seed yield isn't better than what we thought it would be, but despite the low seed yield, the growers thought it is still a viable seed crop, since there is a good market for it. Despite strong grain futures, sales and production of Willow Creek are steady in 2008. A follow-up survey will be conducted to determine if an adequate supply of seed is available.

EVALUATING CORN SILAGE DENSITY MEASUREMENT TOOLS

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Silage dry matter losses during a 180-day storage period and dry matter losses during feed out are directly related to silage density. Silage density should be at least 14 pounds per cubic foot (dry matter basis) to minimize dry matter losses. Before beginning work with producers to help them improve their silage management, and reduce dry matter losses, a reliable method to measure silage density had to be established. Researchers and extension personnel at the University of Wisconsin have developed three procedures for measuring silage density: 1) direct measurement with a forage probe, 2) using a silage density calculator spreadsheet, and 3) using a feed load out spreadsheet. Each of these methods was evaluated at 18 different silage storage facilities. The results of each method and site were compared to determine reliability of the methods used. Since the probe method measures a specific volume and weight, this method was used as the standard to compare the others against. Comparing the results of the 18 sites, it was found that the silage density calculator spreadsheet method is reliable with a correlation of r=0.7 between the two methods. The feed out method was not found to be reliable with a correlation of r=-.06 between the two methods. The feed out method required most of the data to be provided by the producer or custom harvester and obtaining accurate data was difficult.

FORAGE OBSERVATION PLOTS HELP PRODUCERS IDENTIFY GRASSES AND LEGUMES

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Identification of grasses and legumes is critical to proper management of pastures and hay ground, yet many livestock producers lack the ability to identify forage plants growing in their fields. Forage observation plots and an identification (ID) manual were developed for teaching forage ID to producers so they would be able to apply appropriate management for their specific forages. Plots of 24 different grasses and legumes were planted in 10 ft x 15 ft plots. Labor, materials, and maintenance were donated by several cooperators. Later, the plots were redesigned into 5 ft x 50 ft rows to facilitate maintenance of mowed vegetation and prevent cross contamination among the different forages. The instruction manual was put together using several, existing fact sheets with information on nomenclature for plant structures and growth characteristics, site selection, and pasture management. Several educational programs were conducted using the plots as live demonstrations while going through the written materials from the manual. Clientele who did not attend a class but needed information on forage ID have used the manuals on their own. Program evaluations documented that knowledge was acquired and that the plots were an effective and enjoyable way to learn forage ID. Those involved in teaching classes and/or facilitating this project have also learned much. Two other Extension agents and two high school vocational agriculture groups have adopted the use of these materials and methods. Forage ID plots and manuals are excellent tools for teaching and learning about old and new forages.

YIELD AND QUALITY OF COMMERCIALLY AVAILABLE TEFF GENOTYPES IN THE PACIFIC NORTHWEST

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Growers have few options available to produce a quick-growing, mid-summer annual forage. Teff (*Eragrostis tef*) is a warm season, annual grass that has the potential to be a viable alternative as a double-crop, rotation out of perennial forage such as alfalfa, or emergency replanting due to crop failure. The objective of this trial was to examine forage production of six commercially available teff genotypes in the Pacific Northwest. In 2006, one teff variety and five, branded teff accessions were planted at three locations, Othello, WA, Klamath Falls, OR and Ontario, OR. Teff produced between 4.6 and 6.9 tons / acre of dry hay from two harvests. The teff types did not differ significantly in yield at any location. Quality differences between types were small and inconsistent across locations. The Relative Feed Value (RFV) ranged from 80 to 97, Relative Forage Quality (RFQ) ranged from 78 to 108 and Crude Protein ranged from 8.1 to 15.0%. Most variation in yield and forage quality was caused by location rather than type. Teff appears promising as an alternative annual forage grass. Many questions remain unanswered including productivity on different planting dates, sugar content, nitrate toxicity and other nutritional questions.

NATURAL RESOURCES

ASSESSING DROUGHT CONDITIONS AND ACCESSING FEDERAL DROUGHT RELIEF IN EASTERN OREGON DURING THE SUMMER OF 2007

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The 2007 water year (October 1, 2006 – September 30, 2007) in Baker County, Oregon was the driest year on record dating back to 1949, with the Baker City Municipal Airport receiving only 5.47 inches of total precipitation. Farmers, ranchers and other agriculture producers who rely on winter, spring and late summer precipitation faced serious drought conditions. In order for State or Federal disaster funds to be made available for local producers, a drought assessment needed to be conducted where crop and pasture losses were collected and economic impact estimates calculated. The Baker County Extension Office was tasked with the responsibility of gathering this information for presentation to the Oregon Department of Agriculture and the Oregon Governor. Preliminary data suggested agriculture producers in Baker County were experiencing a fifty percent reduction in irrigated pasture and hay production and greater than a reduction in non-irrigated pasture and range production. This loss of feed coupled with an inflation of over seventy percent in harvested feed costs in the area forced many ranchers into considering reducing herd sizes by as much as seventy percent. Due to our drought assessment we were able to get drought/disaster declarations for Baker County and the majority of Eastern Oregon by the Counties, State and U.S. Secretary of Agriculture. This made funds available from the USDA Farm Service Agency through the Livestock Compensation Program (LCP). The LCP made available over $490,000 dollars for livestock producers in Baker County to help with purchase of winter feeds and to reduce cow sales.

PROGRAM FOR SMALL ACREAGE STEWARDSHIP RESULTS IN IMPLEMENTATION OF LAND MANGEMENT PRACTICES

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Small acreage landowners have a significant impact on water quality and other natural resources through their cumulative effect. Manure runoff and sedimentation from small livestock operations, infestations of invasive weed species, degradation of riparian areas, and unreliable maintenance of private wells and septic systems are identified needs that require landowner awareness. The "Living on the Land, Stewardship for Small Acreages" workshop series developed by professionals and faculty from eight western states, was adapted, locally, for small-acreage landowners in the Willamette River basin. Four workshops and one field tour covering relevant topics were offered in three watersheds, inviting neighbors to learn about management practices that improve land and water quality. Results from a questionnaire given eight to eleven months after the workshops, show that 85% of the participants implemented at least one new management practice on their land as a result of the workshop series. Ninety-four percent of the participants still plan to implement one or more additional practices. Eighty-six percent of the participants told friends and neighbors about the practices they learned during the workshop series. Small-acreage landowners are eager to learn and implement management practices on their land. As more Oregonian landowners act as land managers, there is need for science-based information and technical assistance to encourage making wise land management decisions.

SATELLITE TECHNOLOGY PROVIDES REMOTE SENSING OPPORTUNITIES FOR LIVESTOCK PRODUCERS IN TRACKING WATER SUPPLIES

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Large, commercial livestock operations in central Oregon may cover hundreds of square miles, consisting of multiple herds of cattle that are rotated through multiple pastures. Daily management of these herds may include fence repair, herding and water checks. These activities all involve the use of limited resources (time and money). Producers are always exploring ways to limit costs and improve the economic vitality of the ranching operation. During the summer of 2008, diesel fuel prices climbed to $4.80 per gallon. Two livestock operators agreed to participate in a demonstration of satellite technology that would provide them with real time data on stock water levels. With this knowledge, producers could decide then how to schedule their day, whether to travel up to 50 miles one way to check water or attend to some other ranch activity. The technology used for this demonstration was not new. It had been used for the last 4 years by this author in a paired watershed study. For the purchase price of $1800.00 to $2400.00 and an internet connection producers were able to check stock tank water levels every one to six hours. Producers who participated in this demonstration reported fuel savings that recovered the purchase price of the monitoring units within 3 months. Labor savings were also noted as it allowed the producers to better manage the daily activities of the ranch.

REMOTE SENSING DIGITAL IMAGERY AND SITE-SPECIFIC AGRICULTURE APPLICATIONS

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Digital imagery can be a valuable tool for many management applications in production agriculture. The applications of aerial or satellite digital image data have been documented through research efforts by universities, USDA-ARS, and industry. The lack of utilization has probably been due to availability and expense of timely data, quality of available data, and user understanding of what the data can provide. We will address some of the data quality issues and interpretation for agricultural applications.

Agriculture issues are often very timely, requiring current data from various sources to assess problems such as rust and mold developments, pest infestations and water stress. Aerial data have been the primary source of remote sensing imagery since satellites are difficult to schedule for timely data, often have low spatial resolution, and data are expensive. But aerial data can have quality issues due to camera configurations, weather developments, and supplier knowledge and ability. The quality of the data depend on camera platforms, data saturation, band to band registration, data compression, temporal resolution, software stitching, and post processing techniques.

IRRIGATION SYSTEM EFFICIENCY COMPARISON IN THE UPPER SEVIER WATERSHED

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Twenty irrigation systems located in the Upper Sevier Watershed in Garfield County, Utah were evaluated during the summers of 2006 and 2007. Distribution uniformity (DU), application efficiency (Ea), and other parameters were calculated for four flood, six sprinkler, and ten center pivot irrigation systems. DU values for wheel-move systems averaged 63% and varied from 35 to 79% in contrast with values for center pivots which averaged 72% and varied from 51-85%. Flood systems were least efficient with an average Ea value of 29% and ranged from a low of 22% and to a high of 36%. Application efficiencies for sprinkler systems ranged from 32-90%, whereas center pivot values ranged from 22-84%. This study identifies the variability of irrigation system efficiency, opportunities to improve efficiency and the importance of irrigation system maintenance.