



Oregon State University Extension Service

# Central Oregon Agriculture

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## Saying Goodbye

*Friends and Colleagues,*

*I will be leaving OSU Extension Service on July 29<sup>th</sup> and moving back to Montana where my husband and I will begin to take over our family farm and ranch. I have truly enjoyed working in Extension along-side producers and colleagues. I will greatly miss all of you, however, my family and I are extremely excited to get back to the ranch and do what we have a passion for.*

*This month I will be wrapping up a few projects, but continue to do field visits and other daily tasks. Again, I will be available until July 29<sup>th</sup>, after which I can be reached in Montana. I will share my forwarding address and other contact information as it comes available*

*Thank you for giving me a fantastic opportunity to get to know Oregon Agriculture and all those that make it possible, sincerely, Barbi Riggs.*

### — Going Away Party —

Join the Crook County Extension on Thursday, July 28 from 3:00 pm to 5:30 pm to wish Barbi good luck on her new adventure. Cake, punch, and coffee will be provided (for those unable to attend, you may email your "Best Wishes" for Barbi to: [pam.wiederholt@oregonstate.edu](mailto:pam.wiederholt@oregonstate.edu)).

## FoodHub, now FREE!

Many farmers and ranchers in Central Oregon were introduced to **FoodHub** last fall when Deborah Kane and Amanda Osborne visited Madras, or in March when Amanda presented at the Living on a Few Acres conference. Back then, membership in the online community designed to connect food producers with chefs and food service buyers across the Western US was \$100 per year (unless you were one of the lucky few who got a free promotional membership!).

Good news just announced, FoodHub is now offering **free membership** to any commercial food producer or wholesale buyer! It is still only open to businesses – you must be wholesaling product or buying for a restaurant or grocery store (but fear not, home canners and smaller producers can connect on Central Oregon Locavore). The new **FoodHub FastStart** account includes ALL the features and functionality developed in the last year and a half, plus brand new improvements just launched. FastStart Members have full access to the Member Directory and FoodHub Marketplace and pay NO fees.

For those not familiar with FoodHub, Matt Battilega of Big B Farms may have said it best, "It's like Facebook for farmers!" Everybody on FoodHub has a profile where they can tell the story of their farm or ranch, promote the products they have available, explain how they do business, rate and recommend other FoodHub Members, and provide their contact information for wholesale buyers. Chefs, restaurant owners, food service directors at schools, hospitals and office buildings also have profiles where they can list the products they'd like to source locally. Distributors, associations and industry suppliers have profiles too, which makes FoodHub a one-stop shop for food business professionals. Robust search and filtering tools make it easy to find your perfect match, and a contact system in FoodHub makes it quick and painless to connect and do business.

Interested companies can learn more and sign up at [www.food-hub.org](http://www.food-hub.org). Questions can be directed to the FoodHub Help Desk by email at [meet@food-hub.org](mailto:meet@food-hub.org), or by phone toll-free at (855) FOODHUB.

*Amanda Osborne/FoodHub, Sales & Marketing Director*



**"Central Oregon Agriculture"** is a bi-monthly newsletter produced by the Central Oregon Extension offices and the Central Oregon Agricultural Research Center. The intent of this newsletter is to extend agricultural research-based information to solve problems, develop leadership and manage resources wisely. Please direct comments and changes to the mailing list to your local County office. Pam Wiederholt - Ag Newsletter Coordinator, Crook County, (541) 447-6228

**Extension offices listed below (all area codes are 541)**

**Central Oregon County Extension Offices:**

**Crook County** Extension Service - Phone 447-6228, 498 SE Lynn Blvd., Prineville, OR 97754

**Deschutes County** Extension Service - Phone 548-6088, 3893 SW Airport Way, Redmond, OR 97756

**Jefferson County** Extension Service - Phone 475-3808, 34 SE D St., Madras, OR 97741

**Warm Springs** Indian Reservation - Phone 553-3238, 1110 Wasco St., PO Box 430, Warm Springs, OR 97761

**Central Oregon Agricultural Research Center:**

Madras Site - Phone 475-7107, 850 Dogwood Lane, 97741

Powell Butte Site - Phone 447-5138, 8215 SW Hwy. 126, 97753

**Extension Service & Experiment Station Web Sites:**

Crook County: <http://extension.oregonstate.edu/crook>

Deschutes County: <http://extension.oregonstate.edu/deschutes>

Jefferson County: <http://extension.oregonstate.edu/jefferson>

Central Oregon Agricultural Research Center:  
<http://oregonstate.edu/dept/coarcl/index.php>

**Central Oregon Agricultural Extension Service Staff:**

Myleen Bohle - Forage, Hay, Pasture and Cereals, 447-6228

Fara Brummer - Ag. and Natural Resource, 553-1520

Marvin Butler- Mint and Seed Crops, 475-7107

Tim Deboodt - Range Resources and Livestock, 447-6228

Amy Detweiler - Horticulture, 548-6088

Steve Fitzgerald - Forestry, 548-6088

Dana Martin - Small Acreage, 548-6088

Barbi Riggs - Livestock, 447-6228

Bo Ming Wu - Plant Pathology, 475-7107

The above individuals represent 7.0 full time equivalents devoted to extending agricultural information to producers. Many of the individuals, in addition to agriculture, have assignments in research, 4H/youth, administration and community resource education.

Often it is appropriate to mention brand names of some commercial products; however, they are used only for the purpose of information. Extension does not guarantee or warrant the standard of the product, nor does it imply approval of the product to the exclusion of others.

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OSU Extension programs will provide reasonable accommodation to persons with physical or mental disabilities. Contact Pam Wiederholt (541) 447-6228 to request reasonable accommodation.

## SolWest Renewable Energy Fair July 29-31

The full SolWest Fair program has been posted on the web at <http://www.solwest.org/fair.htm>. This year's SolWest is an incomparable educational event featuring keynote speaker Philip Ackerman-Leist, author of "Up Tunket Road." The Oregon Electric Vehicle Association is planning a "John Day or Bust" EV trip into the wilds of Eastern Oregon for the fair. We have 54 workshops, 34 exhibitors, 3 pre-SolWest professional workshops, and a cob oven building party at the Community Garden; as well as many ways to observe and get hands-on experience with renewable energy and sustainable living technologies. There is no better opportunity in the Northwest for leaning and networking with other renewable energy enthusiasts!

Check out our online program, and let me know if I can answer any questions. If you haven't contacted us in over two years, and you wish to receive a printed fair program in the mail, please send your current mailing address.

*Jennifer Barker/EORenew/SolWest Fair, (541) 575-3633*

*[infor@solwest.org](mailto:infor@solwest.org) or [www.solwest.org](http://www.solwest.org)*

## Deschutes County SWCD 2011 Small Grant Program

Funding for The Small Grant Program is generated through Oregon lottery dollars and is a voluntary program that works with your framework and objectives to enhance and preserve natural resources on your property. Some of the goals for maximizing resource potential include: soil stabilization (reducing erosion in uplands and riparian), weed control, in-stream and riparian enhancements, irrigation efficiency, improve wildlife habitat, increase water quality and improve water quality. Funding is limited, so if you're interested, please contact Spring Olson/ Conservation Technician at (541) 647-9604 or [springalaska@hotmail.com](mailto:springalaska@hotmail.com).

*Spring Alaska Olson*

## VAPG - Value Added Producer Grant Program

Grants to plan & implement value-added projects that increase the customer base and revenue of commodity producers. Farmers, ranchers, foresters & fishers may receive USDA Rural Development matching grants for either planning or working capital purposes to implement value-added ventures - i.e., for marketing or processing activities that add value to the commodities they raise or for on-farm renewable energy generation projects. The goal of the program is to expand market opportunities for producers and increase the producer's share of revenue from their commodities.

For more information: <http://www.rurdev.usda.gov/or/biz/VAPGoverview2011.pdf> or (541) 923-4358 x 119 or [bill@wyeast-rcd.org](mailto:bill@wyeast-rcd.org).

*Bill Mintiens/Executive Director Wy'East RC&D Council*

## Funding for Sage-Grouse Habitat and Manage Juniper

The USDA [Natural Resources Conservation Service \(NRCS\)](#) is now accepting applications from private landowners in eastern Oregon for funding to enhance sage-grouse habitat and improve the sustainability of working ranches. Applications for fiscal year 2012 funding will be accepted at local USDA service centers through **August 19, 2011**.

In Oregon, the NRCS Sage-Grouse Initiative (SGI) focuses primarily on providing financial assistance for removal of juniper in the early stages of succession, focusing in high priority sage-grouse habitat areas. The goal is to alleviate the threat of juniper expansion to sage-grouse habitat, improve rangeland health, and prevent further resource degradation. Efforts also include the marking of fencing near known sage-grouse mating areas, or leks, to prevent accidental collisions.

“The Sage-Grouse Initiative gives landowners and NRCS an opportunity to work together to implement the right conservation practices, at the right time, and in the right places before the opportunity to do so is lost,” said NRCS Statewide Habitat Biologist, Jeremy Maestas. “This science-based, strategic approach helps private landowners proactively work to prevent sage-grouse from being listed under the Endangered Species Act.”

This year’s sign-up follows two years of private landowners working with NRCS under the SGI to remove over 55,000 acres of juniper in priority sage-grouse habitat areas and mark over 21,000 feet of high-risk fences to reduce accidental bird collisions near breeding sites.

“We’ve had overwhelming success with participation in this program these past two years,” said Ron Alvarado, Oregon NRCS State Conservationist. “It’s clear that restoration practices such as removing invasive juniper in the sagebrush steppe ecosystems benefit not only sage-grouse habitat, but also improves the overall health of the rangeland, maximizing the long-term sustainability of these ranching operations.”

This initiative will continue to focus primarily on juniper management in high priority habitat areas located across Baker, Crook, Deschutes, Harney, Lake and Malheur counties.

Payments to land owners for removing juniper depend on stand density, and have generally ranged between \$29 and \$141 per acre, according to Maestas. Practices are funded through the [Environmental Quality Incentives Program \(EQIP\)](#) or the [Wildlife Habitat Incentives Program \(WHIP\)](#). Updated payment schedules for 2012 will be posted on the [Oregon NRCS SGI website](#) in the coming months. Additional practices to alleviate secondary threats to sage-grouse may also be covered, including marking fences to increase their visibility and reduce sage-grouse mortality; installing escape ramps for wildlife in livestock watering troughs; resting treatment areas from grazing to increase residual grass cover and increase grouse nest success; and treating noxious or invasive weeds to improve range condition and sage-grouse habitat.

Landowners in the following counties who are interested in this program should contact their local service center to apply prior to the August 19 cut-off date.

Baker County Service Center: (541) 523-7121

Deschutes & Crook County Service Center:

(541) 923-4358

Harney County Service Center: (541) 573-6446

Lake County Service Center: (541) 947-2367

*Jeremy Maestas/Statewide Habitat Biologist, (541) 923-4358, Ext. 109, [jeremy.maestas@or.usda.gov](mailto:jeremy.maestas@or.usda.gov) or Sara Magenheimer/NRCS State Public Affairs Officer, (503) 414-3250, [sara.magenheimer@or.usda.gov](mailto:sara.magenheimer@or.usda.gov)*

## Crop Water Use Program

Powell Butte, Madras, Bend, and Christmas Valley are the local Agrimet weather station sites that producers can go on line and follow predicted crop water use by different crops. These evapotranspiration (ET) numbers represent the amount of water that is transpired and evaporated from the crops on a per acre basis in inches. What these numbers do not take into account is the efficiency (or inefficiency) of the irrigation system. Web site: <http://www.usbr.gov/pn/agrimet>, click on “Crop Water Use Program”.

For example if you had a wheel line, one might start with the premise that the wheel lines or hand lines are 70 percent efficient or that a pivot is 85 percent efficient. You would divide the ET rate by the efficiency percentage rate and that number would be the amount of inches per acre that a person would irrigate back to fill up the soil profile. One will always be irrigating more than the plant uses. Remember this is a guide, and it will be close, but may not be “exact” for your place.

*Mylen Bohle*

## What is Hay Worth?

Wondering what the price of hay is whether you are buying or selling? Especially if you are raising and selling hay, you may want to get in on the weekly call from USDA Market News Service, Moses Lake, WA. The C.O. hay market report can be freely accessed at the home page: [http://www.ams.usda.gov/mnreports/ml\\_gr313.txt](http://www.ams.usda.gov/mnreports/ml_gr313.txt) or to check other state markets:

<http://www.ams.usda.gov/AMSV1.0/ams.fetchTemplateData.do?template=TemplateN&navID=MarketNewsAndTransportationData&leftNav=MarketNewsAndTransportationData&page=LSMarketNewsPageHay>.

Once you are signed up to participate in the hay market report if you would like to contribute to the report, someone from the office will call (or you can call) and inquire if you have sold hay, number of tons, for what price, what the quality is, etc. This information is then compiled weekly and put up on the Internet or is published in the Capital Press. The idea is if both seller and buyer know the market, then a true, free and fair market exists for all concerned. It also works if you want to buy hay and you are wondering where the market is at, when looking for hay to purchase. Contact phone number is (509) 765-3611.

*Mylen Bohle*

## Growing Degrees Update

In the last newsletter we had an article on growing degrees. The table has been updated to July 1. If you are curious, this is how 2011 compares to previous years, for Madras, Powell Butte, Bend, and Christmas Valley (these sites represent considerable differences in elevation for comparison). The following table shows a comparison of accumulated growing degrees back to 2007 for these central Oregon locations. Three different base temperatures are used: 32 degrees F for cereals and T-Sum N Fertilization, 41 degrees F for alfalfa and grass growth, and 50 degrees F for grapes and corn growth. Comparison of day length: Madras > Powell Butte > Bend > Christmas Valley.

Table. Accumulated growing degree comparison for 32, 41, and 50 degree F base temperatures as of July 1, for the years 2011 to 2007, at Christmas Valley, Bend, Powell Butte, and Madras, Oregon.

Year	Christmas Valley			Bend			Powell Butte			Madras		
	<u>32</u>	<u>41</u>	<u>50</u>	<u>32</u>	<u>41</u>	<u>50</u>	<u>32</u>	<u>41</u>	<u>50</u>	<u>32</u>	<u>41</u>	<u>50</u>
2011	1967	1156	578	2194	1207	553	2193	1232	573	2468	1418	681
2010	2168	1250	655	2348	1298	604	2414	1356	643	2613	1482	711
2009	2386	1485	850	2521	1508	811	2562	1563	879	2693	1650	926
2008	2208	1364	788	2355	1394	755	2321	1374	731	2532	1527	812
2007	2512	1657	1031	2703	1668	950	2621	1627	926	2818	1775	1016

(32, 41 and 50 degrees F base temperatures use “growing dds” calculation)

<http://uspest.org/OR/index.html> is the web site that has all of the weather station sites in Oregon and allows you to choose different base temperatures and different ways to calculate growing degree days. “Central Oregon Growing Degrees Comparison”, is located at <http://extension.oregonstate.edu/crook>, and has 5 year tables showing monthly and cumulative growing degrees from 2011 (coldest) back to 2007 (warmest) for these 4 sites. Pretty remarkable differences!

*Mylen Bohle*

### Wine-Growers Association of Central Oregon

The Wine Grape Association of Central Oregon (WGACO or WACO) presents: Making Wine from Hybrid and Vinifera Grapes, Friday, August 12, 1:00 pm to 5:00 pm., Ranch at the Canyons Club House, Terrebonne, OR. Dr. James Osborne, OSU Extension Enologist, and Chris Lake, of Southern Oregon Wine Institute and Umpqua Community College will present and Laura Cooper will lead a wine tasting of hybrid grape wines. Everyone is welcome! For more information contact Cindy Grossman, Secretary, at (541) 350-5384 or [cindy@faithhopeandcharityevents.com](mailto:cindy@faithhopeandcharityevents.com), or Kerry Damon, Vice President, at (541) 771-7817. Cost is *FREE* but donations are appreciated.

*Mylen Bohle*

### 3rd Annual OWRI Viticulture & Enology Research Colloquium—August 25, 2011

*LaSells Alumni Center, Oregon State University Campus, Corvallis, OR*

Join us for this one-day event featuring research that impacts Oregon’s wine grape industry! This is an opportunity to learn about the most recent outcomes of viticulture and enology related research projects conducted by researchers at Oregon State University, the USDA-ARS Horticulture Crops Research Unit, and other collaborating units in the program. For more information, visit <http://owri.org/>.

*Patty Skinkis*

### Cereal Leaf Beetle Biocontrol Project Update

If anyone has a field of preferably oats, but any other irrigated field of spring cereal that has some cereal leaf beetle infestation and will not be sprayed for cereal leaf beetle, please give the Crook County Extension Service a call (541-447-6228). More than likely these are fields that will be cut for hay. We are looking for a few fields to release the cereal leaf beetle larvae that contain the parasitic wasp *T. julis* that will eventually control the cereal leaf beetle.

*Crystal Frakech, Gary Brown and Mylen Bohle*

### Afternoon vs. Morning Cut Hay

What “minor” management trick is there that can change the quality of hay, to make it better, or “to make it better by making it worse”? We can increase the digestibility and palatability of grass or legume hay by harvesting or cutting later in the day. The closer we can cut or swath hay around 6:00 to 8:00 pm or so, the higher the quality and palatability of hay. So if we can start swathing hay between 3:00 or 4:00 pm until maybe an hour before dusk or so, we can increase digestibility, as well as palatability! It has been proven time and time again by a majority of animals fed morning-cut vs. afternoon-cut hay. The animals prefer afternoon-cut hay compared to morning-cut hay. So this would/could/should make the hay worth more, for the both the seller and buyer, if you want higher quality hay to increase meat or milk production.

Now, if we want to make hay better, “by making it worse”... We would manage our hay harvest just the opposite. In this case, we are trying to conserve hay that is lower in digestibility (lower in non-structural carbohydrates and sugars) and palatability.

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### **Afternoon vs. Morning Cut Hay**

So we would want to cut or swath as early in the morning as possible and then stop cutting hay before noon. The problem with this management method is that the dew can stop us from starting harvest, sometimes until late morning or even until after noon. But by cutting in the morning, this will produce lower-carb / lower-sugar hay than normal, that some of the horse hay buyers are looking for. If you swath with dew on the foliage, then you will have to ted the hay more often to dry it down, or do you?

When hay is drying down from around 78-82% moisture when initially cut and until the hay reaches about 48% moisture – the plants are still transpiring and you are losing dry matter yield and feed value. Carbon dioxide is being given off. If you are after high quality feed, than you want to dry that hay down as rapidly as possible – cut as wide of windrows as possible, condition it, and ted it to increase the speed of drying time, before baling... If you are after lesser quality hay, then cut the hay into narrow windrows, do not condition, and do not ted the hay, and allow it to take longer to dry, before baling...

So if I was a serious buyer of hay, I would ask whether it was afternoon-cut or morning-cut hay and if I was the seller, I would want to be able to tell my hay buyer the answer.

*Mylen Bohle*

### **Clover / Bluegrass Pastures & Warm Weather**

With warm summer weather here, producers with Kentucky bluegrass and White clover pastures will want to start paying closer attention to grazing heights. We are now into much warmer weather than what cool season grasses like for growing conditions; but we are also now just into the type of warm weather that legumes (such as White clover), like growing in, and will stay that way into August.

Cool season grasses like Kentucky bluegrass, especially (and to a lesser extent, orchardgrass, tall fescues, the bromes, etc.) are now at a disadvantage growing in this warmer weather (they do best with temperatures in the mid 60s to mid-high 70's degrees F), and Legumes (like White clover, alfalfa, red clover, etc.) have an advantage when in a mix during this time. Alfalfa grows best at 86 degrees F. This is just based on species adaptation.

Then if we introduce short grazing heights into the mix, how does that play out? If we can keep grazing heights up to 3-4 inches, Kentucky bluegrass will grow better and compete better with White clover. As we lower that grazing height, White clover has many tiny leaves close to the soil surface (plus it likes hot weather and grows rapidly) and can keep regenerating itself. Kentucky bluegrass on the other hand, as you reduce grazing height, has less leaf material in which to photosynthesize (plus it does Not like hot weather and wants to go dormant, and not grow...).

Suddenly you have a pasture that looks like an all White clover and no grass pasture, if you are allowing your animals to close-

graze your pastures (down to one-two inches or less).

So if you want more Kentucky bluegrass (or any other grass species) growing in your mixed pasture, keep the grazing height up.

If you are unhappy with all of that clover in your pasture, you can always spray it out with a herbicide; but you give up a resource, that if managed better, provides excellent feed quality and fixes nitrogen to feed itself, and partially it's surrounding grass plants. Once an excellent grass/legume pasture is functioning properly, by managing it properly, little, if any, nitrogen fertilizer, may be needed.

*Mylen Bohle*

### **Potential Live Weight Gain on Grass?**

Have you ever wondered what the potential for live weight gain on irrigated grass pastures might be?

Here are the results of one study that was done in the PNW (at Prosser, WA), from 1978-1981 comparing orchardgrass and perennial ryegrass, 3-acre pastures, using Management-intensive Grazing. Light-weight steers were grazed over the 4 seasons and the animals were put in or removed as needed to avoid under- or over-grazing.

Orchardgrass supported an average of 3.66 steers/acre, while perennial ryegrass supported 3.00 steers per acre. Average daily gains, for orchardgrass was 1.92 lb/ac and 2.26 lb/ac for perennial ryegrass. Average annual steer gains in lb/ac, was 1,106 lb from orchardgrass and 1,129 lb from perennial ryegrass. 'Grimalda' Perennial ryegrass sustained winter damage between the first and second years of the study, while 'Latar' orchardgrass was not damaged at all. Steers grazing orchardgrass had to eat 17% more forage in order to obtain the same amount of net energy as the steers that consumed the Perennial ryegrass.

*(edited from Heinemann, W. and Hanks, E.. 1982. Irrigated Orchardgrass and Perennial Ryegrass Pastures Grazed by Light Weight Steers. WSU Research Bulletin XB 0926.)*

*Mylen Bohle*

### **Low Carb/Sugar Forage**

It has been a challenging spring for forage producers, especially those growing grass for pasture. One needs to be careful and not overgraze the pasture up front, or for that matter, ever... For those who are grazing horses on pasture, I find it interesting as I drive around central Oregon and see all of the overgrazed pastures. I marvel at the lengths that some horse owners are going to in order to produce, manipulate, modify, sell and/or buy low-carb or low-sugar hay to feed their animals. Why?

We manage horse diets in the late Fall to early spring with hay (low-carb hay for those prone to metabolic syndrome, diabetes, laminitis), but then in the Spring, Summer and Fall, many horse owners allow their horses to graze their pastures "tight" (less than an inch in height). If you are grazing your pasture tight, then you are allowing those animals to increase their intake of higher carb/sugar forage. How?

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## Low Carb/Sugar Forage

The closer the animal grazes to the soil and into the crown of the plant, the higher the levels of non-structural carbohydrates and sugars the animals will consume; because that is where those nutrients are stored in the plant in higher concentrations. Not good for the animal, and certainly not optimal management for the plant! This affects the health of the plant and its forage production.

Horse owners (and other livestock owners) also spend a lot of money on parasite programs, but then they again allow their animals to graze tight. The tighter a producer allows their animals to graze, there is an increased chance of the animal picking up parasites.

There are many, very good reasons for keeping your grazing height up on your pasture, for both the health of the animal, and the health of the plant.

*Mylen Bohle*

## Reduce Irrigation Energy Costs

No matter the size or nature of your agricultural operation, energy costs are probably growing faster than you'd like. Lighting, heating, refrigeration, irrigation and processing equipment, and more—together, they consume a large part of your potential profit. But with Energy Trust assistance, you can cultivate healthy energy cost savings in any economic climate.

There are cash incentives to help offset the costs of energy-efficiency upgrades to buildings and equipment for dairies, nurseries, commercial farms and other agricultural businesses. We also offer technical assistance and cash incentives for harnessing renewable energy resources on your property, including bio-power, solar electric and solar water heating, geothermal energy and wind power.

We currently offer cash incentives to agricultural businesses for qualifying investments in:

[Irrigation Equipment](#)

[Greenhouse Upgrades](#)

[Motors and Drives](#)

[Lighting and Lighting Controls](#)

[Heating and Cooling](#)

[Insulation](#)

[Compressed Air Systems](#)

[Bio-power](#)

[Solar Electric](#)

[Solar Water Heating](#)

[Wind - Small Scale](#)

[Wind - Commercial Scale](#)

[Geothermal](#)

[Hydroelectric Power](#)

Check with your electrical company provider to see if you are eligible to participate, or contact Energy Trust of Oregon at (503) 928-3154, or go to <http://energytrust.org/>.

*Mylen Bohle*

## Nematodes Affecting Wheat Yield in Central Oregon?

Most nematodes are microscopic roundworms that either contribute to or detract from agriculture. Out of the 20,000 identified nematode species, 2,000 are known to be plant parasites. They cause an estimated \$8 billion worth of damage to all crops in the U.S. each year.

Cereal-Cyst, Root-lesion, Root-Knot, Stunt, Pin, Dagger, and Root-gall nematodes have been found in small grain crops in eastern Oregon and Washington over the years. Cyst and lesion nematodes are responsible for most of the damage or yield reduction in cereals.

All of these nematodes decrease the function of the root to absorb moisture and nutrients through reduction of the root depth and root branching. Yield reduction is difficult to prove, because studies are needed to show effect of nematicides, soil fumigation, and resistant and susceptible varieties. It is difficult because yield responses are influenced by multiple interacting climate, plant and soil factors.

Cereal-cyst nematodes can be eliminated by one year of rotating to a non cereal or grass. Back to back wheat or grasses would encourage their reproduction. Root-lesion nematodes (*Pratylenchus neglectus* and *thornei*) have a very broad host crop range. Crop rotation can only reduce root-lesion numbers by summer fallow or by planting field pea, flax, safflower, or triticale.

In a few controlled experiments in eastern Oregon, looking at zero nematodes to increasing numbers of nematodes, Stephens wheat yield was reduced from 105 to 55 bu/acre, by Cereal-cyst nematode; Zak spring wheat yield was reduced from 85 to 65 bu/acre by root-lesion (*P. thornei*) nematodes; and Zak spring wheat yield was reduced from 48 to 40 bu/acre by root-lesion (*P. neglectus*) nematodes.

Excellent irrigation and fertility management under irrigated conditions can go a long way to lessening the damage to wheat. In irrigated crops, the 900 root lesion nematodes per pound of soil for an economic threshold is likely greater. Some fields sampled in eastern Oregon had populations as high as 16,000 nematodes per pound of soil. 40-45 percent of the fields surveyed in eastern Oregon have populations higher than the 900 per pound threshold.

There is progress being made on quantifying the resistance and susceptibility of spring and winter wheat, and barley varieties to different nematodes. Barley varieties seem to be much more tolerant. Dick Smiley at the CBARC, Pendleton, Oregon, is leading this project.

Knowledge of the nematode history of a particular field and the decision to plant what cereal species, and or variety, into that field, will hopefully be made with greater knowledge in the future, as we learn more about the effects of certain nematodes on cereal production, and provide better future variety recommendations under such conditions. *(The information in this article was partially edited from R. Smiley. May, 2005.*

*"Plant-parasitic Nematodes Affecting Wheat Yield in the Pacific Northwest". OSU Extension Service publication EM 8887.)*

*Mylen Bohle*

## Root Zone Depths

The following table presents the effective rooting depth and allowable depletion (%) of soil water for some of the crops grown in central Oregon. The root zone can be limited by soil depth, hard pans, etc. The crops depend upon 90% of their water needs within these listed root depths. The allowable depletion (%) is the amount of total available moisture that these crops can withdraw from the total soil water holding capacity without suffering yield loss (or in other words, are growing optimally at all times).

Root Zone Depths for selected crops grown in central Oregon.

Crop	Root Zone (ft)	Allowable Depletion (%)
Alfalfa	4.0	60
Beans	2.5	50
Chickpeas	4.0	60 (?)
Corn	3.0	50
Grapes	3.0	65
Mint	1.0	40
Orchard	6.0	50-65
Potatoes	2.0	30-40
Pasture	2.0	60
Small Grains	3.0	50

Information edited from various BPA publications.

*Mylon Bohle*

### June 21 - Important Date for Grass Roots?

After June 21<sup>st</sup>, perennial grass plants will be growing for the rest of the growing season with decreasing day lengths. Sometime right around that date, is approximately when our grasses begin their summer slump - slower growth that we talk about. Cool season grasses do not like for growing in hot temperatures and therefore do not provide as much forage as we would like them to produce during this time. So if we plant a legume with cool season grasses, like alfalfa or clover, legumes grow best when the temperature is around 86 degrees F vs. around 63-65 degrees F average daily temperature for cool season grasses. But I digress...

So what is also happening with the cool season grasses below the soil surface around or after June 21, the longest day of the year? The roots of cool season grasses begin to shed themselves. They will have been white up to that time period and actively growing, but from that point on, they will appear to be tan to brown, still growing somewhat, but in decline. So the summer slump that we talk about would appear to be partially due to root shedding – it sure would have an effect on grass growth if the root is not actively regenerating itself optimally during this time.

The roots will continue this decline until around the end of August or the first to mid part of September when the plant will be growing new roots going into the fall. During that Fall root-growth period, next year's spring forage growth will also be set; the spring tillers are formed in the Fall.

If you graze your pasture down, like a table top, in the Fall, you will have set back a lot of next-years, spring forage growth. You will dramatically reduce your yield of harvestable forage by your animals. That 4 inches of stubble or regrowth you need to leave behind, belongs to the plant, not the animal grazing it. Different grass species have a range of 2-6 inches in terms of stubble height that should be left.) Think of it as your grass bank account and when you over draw (over-graze), there is a penalty!

Fall grazing management is extremely important as you might imagine, but so is spring grazing management, and summer grazing management, if you want to optimize your pasture forage production. Be careful with those grazing and clipping heights on your grass plants. All of your forage production comes from the regrowth of your pasture or hay fields. If you graze or clip to the ground, the plant has to regenerate itself from a very small leaf area (think very small solar panel) and the root system, which does not contain nearly as much non-structural carbohydrates and sugars as the crown area does, which is needed to regrow. And the green leaves (again think of them as solar panels) left as stubble, allow the plant to photosynthesize immediately, and regrow and regenerate it's root system. This needs to happen in the Fall, when the plant is regenerating it's root system and crown area to go into the winter.

*Mylon Bohle*

## CALENDAR

### July

- 21 Intermountain Research & Extension Center Field Day, Tulelake, California. Call (530) 667-5117.  
28 Barbi Riggs, Central Oregon Livestock Agent going away party (see article front page).  
29-31 SolWest Renewable Energy Fair (see article page 2).

### August

- 12 Making Wine Workshop (see article page 4 ).  
19 Sage-Grouse Habitat and Manage Juniper Funding Deadline (see article page 3).  
25 3rd Annual OWRI Viticulture & Enology Research Colloquium (see article page 4).

### September

- TBA Wheat Marketing Meeting (if there is a reason to hold one).  
21-23 Society for Range Management Pacific Northwest Section Fall Meeting and Tour, Cranbrook, British Columbia, Canada.  
For more information contact: Rae Haddow at (250) 426-1780 or [rae.haddow@gov.bc.ca](mailto:rae.haddow@gov.bc.ca).

### October

- TBA Wheat Marketing Meeting  
TBA Fall Forage Day, Oregon Forage and Grassland Council.

### November

- 12 Oregon Hay King Contest. Central Oregon Location TBA.

### December

- 11-13 Western Alfalfa & Forage Conference, Hilton Hotel, Las Vegas, Nevada.

### January 2012

- 28 Central Oregon Forage Day. Prineville, OR. Location TBA.

CENTRAL OREGON AGRICULTURE



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