



Oregon Small Farm News

Spring 2014

Oregon State University Small Farms Program

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Audacious Plan Launched to Provide More Small Farms Extension Positions

By: Garry Stephenson & Lauren Gwin, Small Farms Program, Oregon State University

At the 2014 OSU Small Farms Conference, we unveiled our audacious plan to fund additional Small Farms Extension positions across Oregon by raising an endowment.

The new OSU Center for Small Farms & Community Food Systems was created to support the Extension Small Farms Program and its work in organic and sustainable agriculture, strong local food economies, and successful small farms.



To kick off this campaign, we're looking for a thousand farmers and local food system folk across Oregon to say "yes! I love it! I'm in!" by donating a dollar (or more). Your donation is more than a dollar: it's a vote of confidence and support.

Go to <http://smallfarms.oregonstate.edu/node/176058> to learn more about our campaign, and donate your dollar (or more) to change the world.

What donors are saying:

"I am excited by OSU's visionary work to sustain small farms by creating the new OSU Center for Small Farms & Community Food Systems. Good work!"

"I love it! I'm in. This is just what a small farmer can do right now to support other small farmers."

"I'm a small time farmer who utilizes and appreciates the resources provided by OSU, and hope the donation will help keep the program informative and continue to help me and others."

"The Center for Small Farms is an extremely important resource that I want to see expanded to other parts of Oregon."

"I give back in recognition of all the help and encouragement I've received from the Small Farms Program staff. I'm grateful for their help."

"I believe small farms are an integral component of a sustainable food system and fully support additional extension service to help our community achieve this goal."

Your Farms. Your Food. Your Communities. Our Future.

New 1000ft² Organic Fertilizer and Cover Crop Calculator Available

By: Nick Andrews, Small Farms Program, Oregon State University

The OSU Organic Fertilizer and Cover Crop Calculator is available on the Small Farms website. It is a downloadable Excel spreadsheet that allows farmers and gardeners to estimate nitrogen release from organic fertilizers and cover crops. The calculator makes it easy to compare the cost of nutrients from cover crops and fertilizers, and develop a fertilizer plan. This allows you to manage nutrients as cost-effectively as possible, and supply enough nutrition for your crops without over-fertilizing. This can help you save money, optimize yield and reduce the risk of water pollution on your farm.

In March 2014 we launched a new “small farms and gardens” version of the calculator that makes calculations on a 1000ft² basis. The original calculator for larger farms was launched in 2010. It makes calculations on a per acre basis (*Oregon Small Farm News*, vol. 5(2), spring 2010). Most small scale farmers and gardeners manage their fields in units that are less than 1 acre. This new version is designed to be easier to use on smaller scale operations.

The new “small farms and gardens” version includes all of the features of the “larger farms” calculator. Both calculators predict nitrogen (N) mineralization from organic fertilizers, compost and cover crops. When you use the nutrient management information and cost comparisons for fertilizers and cover crops, you can select the cheapest fertilizers and fertilizer programs for your farm that meet but do not exceed crop requirements. Depending on what you are doing now, this can save \$200 or more per acre.

In November 2012, Dan Sullivan and Nick Andrews published PNW 636: “Estimating plant-available nitrogen release from cover crops”. This 23 page publication describes the science used to predict N-mineralization from cover crops, and answers many common questions about N release and immobilization from cover crops.

How much nitrogen can you get from a cover crop?
Figure 1 presents findings from Amy Garrett and John Luna’s research. The graph on the left shows that a

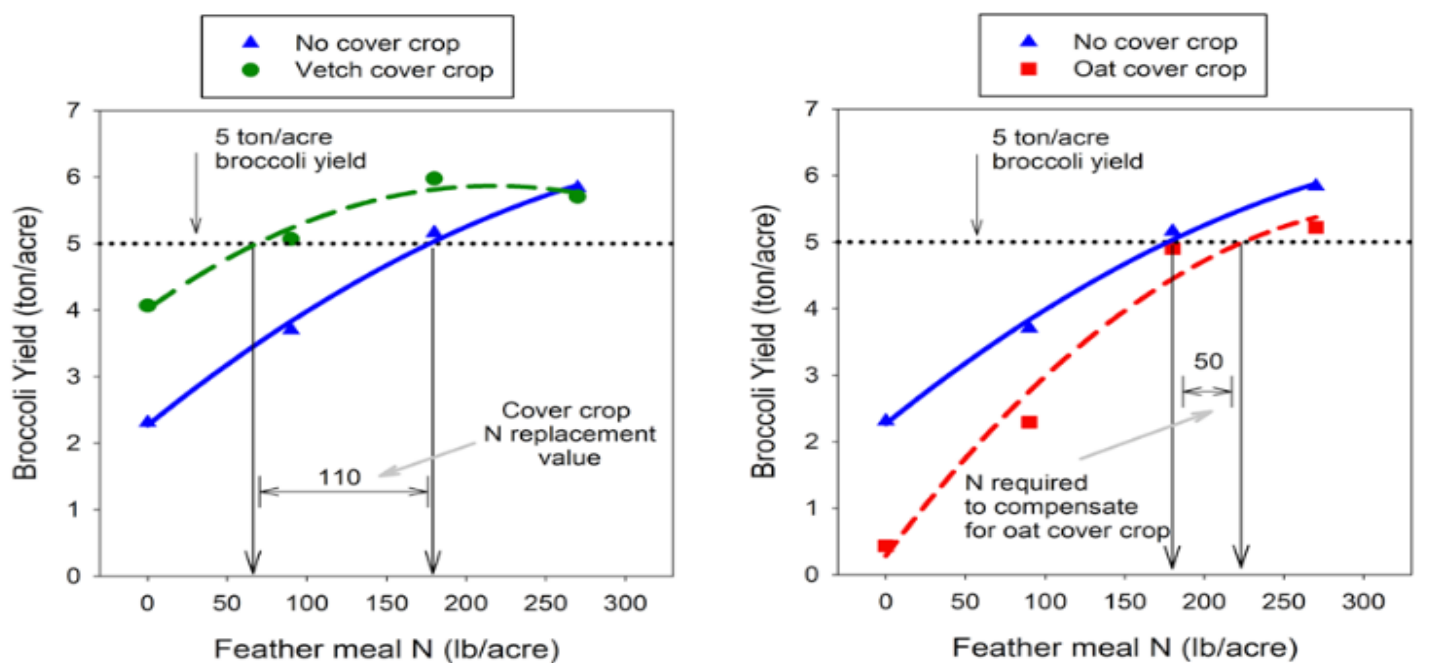


Figure 1. A vetch cover crop reduces the N requirement for broccoli (left). An oat cover crop increases N required for broccoli (right). Fertilizer equivalency is estimated at a broccoli yield of 5 ton/ac.

vetch cover crop supplied about 110 lbs of plant-available N (PAN) for broccoli. In this example, a farmer could reduce supplemental N fertilizer by about 110 lbs PAN/acre and save up to \$600/acre in fertilizer costs. The graph on the right shows that an oat cover crop immobilized about 50 lbs of plant-available N when it was decomposing. This farmer would have to supply more N fertilizer to maintain crop yield.

How can you estimate cover crop PAN?

To estimate cover crop PAN you first need to measure or estimate cover crop biomass, dry matter and total N content. The most accurate on-farm method is to harvest cover crop foliage from a known area and measure the fresh weight (figures 2-3). Mix the complete field sample thoroughly for a few minutes and shred large plants by hand (figure 4). Collect a small (i.e. 1 lb) sub-sample and send it to a soil and plant laboratory in a paper bag (see [Laboratories Serving Oregon](#)). Make sure you don't send any soil with the sample, and that the lab is willing to dry and grind your whole sample.

When you have results back from the lab, you can use the OSU Organic Fertilizer and Cover Crop Calculator to estimate PAN on a per acre scale, or per 1000ft². We periodically hold workshops to show people how to sample cover crops and use the calculator. It generally costs less than \$20 for postage and lab fees to analyze cover crops. It is not uncommon for people to see improved crop performance, and to save \$200 or more per acre by including cover crop N in their fertilizer plans. If you prefer not to send cover crop samples to the lab, you can estimate cover crop PAN by measuring cover crop biomass and using typical values to predict PAN. After a couple years' experience measuring cover crops and using the calculator, some farmers feel comfortable estimating cover crop PAN visually based on their experience.



Figure 2. Harvesting cover crop biomass from a known area (4 ft² quadrats in this picture) in order to estimate plant-available N release. This is usually done from at least four areas of the cover cropped field.



Figure 3. Weighing the cover crop biomass from the complete field sample. Samples from all four areas of the field are combined.



Figure 4. Mixing the harvested cover crop to weigh total fresh weight from the 16 ft² sample we take from each field. Submit about a 1 lb sub-sample to the lab to measure percent dry weight and percent total N.

Growing Local Food Businesses for Community Economic Development

By: Michelle McGrath, Executive Director, Gorge Grown Food Network, and Sarai Johnson, Assistant Director, NEDCO

Throughout Oregon, interest in leveraging enthusiasm for local food as an economic development tool is growing. Two community food system organizations, Gorge Grown Food Network (Gorge Grown) in Hood River, Oregon and Neighborhood Economic Development Corporation (NEDCO) in Springfield, Oregon have launched programs to support new food entrepreneurs in their regions. Both organizations were responding to a growing demand for assistance in acquiring the skills, knowledge and tools fledgling food businesses need to succeed.

Gorge Grown's Food Biz Incubator

In 2006, Gorge Grown launched the Hood River Farmers' Market as a way to facilitate sales of fresh, local produce and meat to local customers. Since then, they have seen the market grow from a six vendor affair to a vibrant 32 vendor must-do Thursday activity. New food businesses have joined the market, and other nearby communities are also building thriving, community farmers' markets, and the result has been an overall increase in both demand for local food and infrastructure to support small farmers and food businesses.

The increase in viable farmers' markets and small farms has laid the foundation for a burgeoning value-added product sector. Take the story of thriving Hood River-based company PocketFuel for example. Founded in 2010, PocketFuel produces an almond-based whole food fuel for athletes. They started their company by renting the commercial kitchen at the Columbia Gorge Community College, selling their product at the Hood River Farmers' Market, and taking advantage of local business planning classes. Today, they have a state-of-the-art facility of their own, a staff team of five and growing, and distribution in more than 400 locations. Using local fruit to flavor their energy fuels and creating local jobs, PocketFuel's success contributes to the local economy.



Red Duck Ketchup got started with help from Hatch and Sprout. Photo provided by NEDCO.

Gorge Grown officially launched their Food Biz Incubator in the spring of 2013. The program relies on connecting local farmers and food entrepreneurs to regional experts in value-added production. Logistics, outreach, evaluation, and demand documentation are supported by Gorge Grown, and local resource providers share their skills or knowledge in a workshop with an audience of aspiring food entrepreneurs. Workshop topics are determined by surveying the needs of aspiring value-added producers. Examples of courses include Food & Farm Law 101, Food Safety Basics for Value-Added Producers, Communication Planning for New Value-Added Businesses, and the three-day Marketplace Readiness Series (a collaboration with OSU-Extension Hood River County). This series included a review of state and county food laws with local officials, production and labeling related training with the Food Innovation Center, and a marketing component with several local graphic designers.

The Food Biz Incubator will also result in an online resource hub to include a guide to the area's commercial kitchens and a road map for local food start-ups. The program is only as successful as Gorge

Center Participates in CFS Convening


By: Lauren Gwin, Small Farms Program, Oregon State University

On the Thursday and Friday before this year's Small Farms Conference, the Center for Small Farms and Community Food Systems was pleased to participate in a convening of more than fifteen regional and statewide nonprofit organizations working to build stronger community, local, and regional food systems across Oregon. The group gathered in Corvallis with support from the Meyer Memorial Trust, which has funded these nonprofits' community food systems work since 2011.

The convening was an opportunity to share accomplishments and project updates; we also learned about efforts in Iowa and South Carolina to link organizations more deliberately to enhance collective impact in regional food systems work. Immediately following the Convening, we (the Center) hosted a strategy session on a topic on the minds of our Small Farms Program and many of these nonprofit groups: wholesale market development and wholesale readiness for Oregon's small farms. The rich discussion, which we plan to continue, will help shape our research and extension priorities at the Center.

The Extension Small Farms Program has partnered with many of these organizations over the years. Continuing and expanding these partnerships – both one-on-one and in larger collaborations – is an

important part of our agenda for our new Center.

One small but important way to do this is by spreading the word about innovative approaches to strengthening community, local, and regional food systems. In this issue of OSFN, we kick this off with the first in an occasional series of articles from our nonprofit allies. Gorge Grown Food Network and the Neighborhood Economic Development Corporation (NEDCO) tell us how they are helping rural food entrepreneurs launch their businesses. 

Participating Nonprofits

ACCESS
Thrive
Cascade Pacific RC&D
Central Oregon
Intergovernmental Council
Ecotrust
El Huerto del Familia
Food Roots
North Coast Food Web
Friends of Zenger Farm
Gorge Grown Food Network
Oregon Rural Action
Northeast Oregon Economic
Development District
Nourish Yamhill Valley
Ten Rivers Food Web
Willamette Farm and Food
Coalition
Oregon Food Bank
Rogue Farm Corps
Headwaters Incubator Farm
Friends of Family Farmers

Oregon Farms Food Safety Program oregonfarmsfoodsafety.com

"Train the Trainers" Food Safety Workshops will be held in English and Spanish for all Oregon produce farmers. They will prepare participants to train harvest workers on recommended food safety practices. The Workshops are Free but require registration.

**Roths West - Salem Apr. 8
OSU NWREC - Aurora Apr. 11
OSU Seafood Res. & Ed. Ctr - Astoria Apr. 16
OSU Columbia Cnty Ext. Ctr - St. Helens Apr. 18
Unger Farm Store - Cornelius Apr. 23
Santo Community Center - Medford Apr. 25
Mary's River Grange Hall - Philomath Apr. 30**

New Extension Guide on Feeding Chickens

In a new Pacific Northwest extension publication, OSU Extension Poultry Specialist James Hermes offers guidelines for feeding small flocks of meat-type chickens. This easy to read four-pager includes a discussion of standard versus organic feeds, mixing feeds at home, and alternatives to traditional ingredients. Download it for free from: <http://extension.oregonstate.edu/catalog/html/pnw/pnw658/>




Grown is in facilitating collaboration amongst resource providers for the benefit of value-added production in the Gorge. This work has been informed by a value-added needs assessment and is funded by Meyer Memorial Trust. For a copy of the assessment or the survey used to conduct the assessment, email info@gorgegrown.com.

NEDCO's Sprout & Hatch Programs

In 2010, in response to a lagging economy and high unemployment, NEDCO partnered with the City of Springfield to create and launch Hatch Business Incubator. With three initial enrollees, the program offered comprehensive business technical assistance and education, affordable retail space on Main Street, and access to capital through matched savings accounts and, as of 2011, NEDCO's affiliate Community Development Financial Institution, Community LendingWorks.


It quickly became apparent that the food industry - the only industry in Lane County to see growth in the depths of the recession - was ripe for entrepreneurial development. Food carts, farmers, and other food businesses were ready to get started or to grow, but they were constrained by limited access to commercial kitchens and lack of access to capital. Simultaneously, NEDCO observed consumer demand rising for year-round access to fresh, local food as its customers at the seasonal Springfield Farmers' Market, opened in 2008, expressed this desire. In late 2011, NEDCO purchased the First Christian Church in downtown Springfield in order to house the idea that would later become Sprout! Regional Food Hub.

Today, Sprout! offers a 3000 square foot kitchen for rent by small food businesses, such as farmers who are ready to expand their businesses by producing value-added items, but who are not quite ready for copacking or other arrangements. Springfield Farmers' Market became Marketplace@Sprout!, operating year-round in the former sanctuary of the church facility. Hatch Business Incubator has grown to focus intently on supporting the food industry, while Community LendingWorks, in tandem, has created a suite of loan products appropriate for a variety of food businesses at various stages of growth. Many Sprout! businesses work through the programs and quickly grow, obtain capital, and move on to larger packing and space

elsewhere to keep building the local and regional economy. People who move through Sprout! programs are apt to agree that "Food Grows Community." It does, in so many ways - from the farmer to the consumer, to the small business, to the full community, food business opens the door to economic security for the community. 

For more about Gorge Grown Food Network and FoodBiz: <http://www.gorgegrown.com>.

For more about Sprout!: <http://www.sproutfoodhub.org>.



Understanding Organic & Sustainable Agriculture **2014 WEBINARS**

On-Farm Food Safety & Conservation

Jo Ann Baumgartner
Director, Wild Farm Alliance
April 15, 2014
12PM Pacific

60 Minutes Food safety is becoming a prominent feature of specialty crop farm operations. While conflicts with conservation and food safety may occur, steps can be taken to diminish them. This webinar will cover how pathogens get on the farm, the prevalence in animals, and environmental factors that influence pathogen reduction.

A multi-barrier approach will be discussed where conservation practices and food safety Good Agricultural Practices (GAPs) are used to minimize food safety concerns. If one barrier fails, others are in place to prevent contamination of crops and water supplies.

Learn about co-managing food safety and conservation in specialty crops by increasing your understanding about the fate and transport of food-borne pathogens, and about multiple conservation and food safety practices that when used together can minimize food safety concerns.

Selling Direct to SNAP Recipients: Strategies for Success

By: Kelly Streit, OSU Extension, Family and Community Health, Clackamas County

There is a growing demand among SNAP recipients to use their benefits to buy direct from local farmers. SNAP is the “Supplemental Nutrition Assistance Program,” formerly food stamps. SNAP redemptions at Oregon Farmers’ Markets & Direct Market Farms increased by 29.8% between 2011 and 2013.

However, SNAP redemptions at farmers’ markets and other farm direct venues represent a mere 0.06% of total SNAP sales for the state. The majority of SNAP benefits are redeemed at supermarkets/supercenters. This is not surprising and mirrors buying habits for the general population: farm-direct sales account for less than 1% of all farmgate sales.

However, increasing the amount of SNAP benefits redeemed at farmers’ markets & other farm direct venues will yield several benefits to communities, including increased access for SNAP recipients to healthy, local, and seasonal foods and increased sales for local farmers. SNAP can also spur local economic development: research from Moody’s Analytics suggests that every additional dollar of SNAP benefits generates \$1.73 in economic stimulus, creating a “ripple effect through the economy.”

Who is your typical SNAP shopper? What are their challenges and needs? How do you best respond to them? How do you keep them coming back to your booth or farm stand again and again?

SNAP shoppers cite the following challenges related to shopping at farmers’ markets and farm stands:

- Higher prices (or a perception of higher prices) and a lack of discount pricing
- Inconvenient market hours
- Lack of cooking skills or kitchen facilities
- High perishability of fresh fruits and vegetables
- Inadequate or inappropriate storage facilities at

home

- Lack of time
- Lack of transportation
- Market shopping experience too “complex” or “unwelcoming,” including language barriers, lack of culturally appropriate market mix, and other factors.

Many individuals, groups, organizations, policies, and procedures are working to solve these problems – it’s not just up to farmers. Yet farmers can use a variety of strategies to increase their SNAP sales this market season. This list will get you started.

One of our priorities at the new OSU Center for Small Farms and Community Food Systems is to facilitate collaboration between the Extension Small Farms Program and the Extension Family and Community Health (FCH) Program, to enhance our collective work to strengthen local and community food systems. FCH led our first community food systems track at the Small Farms Conference last month. In this issue of OSFN, we kick off an occasional series of articles from our FCH colleagues.

10 Tips & Strategies to Increase SNAP Sales

1. **Location, Location, Location!** Participate in farmers’ markets where SNAP shoppers shop: you can find out from market managers.
2. **Post “welcome” signs at your booth: *SNAP Shoppers Welcome!*** Market Managers do post SNAP signs at the farmers’ market, and SNAP shoppers can shop at most booths. However, don’t assume that shoppers will automatically come to your booth.
3. **Personally welcome people into your booth.** Engage shoppers and develop relationships that will keep them coming back. (This will help with all your customers, not just SNAP shoppers.)

4. Encourage cost-conscious shoppers to purchase lower-cost, in-season fruits & vegetables to “stretch” their food resources. Also:

- a. Sell products in simple price units, such as per item, or 5 for a \$1, and label everything clearly;
- b. Adopt the “*Baker’s Dozen*” concept. This relationship-building opportunity “pays it forward” in ways above and beyond sending excess produce to the food pantry at the end of the market day (which is also a good practice);
- c. Encourage food preservation efforts, like freezing and drying, by offering volume discounts. The OSU Extension Service website provides links to resources on current food preservation & safety practices (<http://extension.oregonstate.edu/fch/food-preservation>)

5. Partner with market managers. Develop on-site marketing programs, expand community outreach efforts, collaborate on social media, deliver incentive programs. Growing SNAP sales is a team effort!

6. Offer seasonal food demos and food tasting at the booth, along with the recipes. Food draws shoppers to you and introduces them to “new” foods. Sell some inexpensive sample packs that allow shoppers to have a new “taste adventure” and provide recipes. You can find many recipes that are family-friendly and easy on the budget at FoodHero.org, a project of OSU’s Extension Family and Community Health Program.

7. Have information available regarding proper handling and storage of fruit and vegetables.

- The OSU Extension Service provides links to resources on food handling and storage at <http://extension.oregonstate.edu/fch/food-storage>, and tips for buying, storing, and preparing Oregon-grown produce at <http://extension.oregonstate.edu/fch/healthy-eating>

- Zenger Farm (www.zengerfarm.org) has created a handout titled “Keeping your produce safe to eat” that you can make available to shoppers at your booth

8. Organize produce in a “new” way. Many shoppers, SNAP and non-SNAP alike, are focused on the immediate “what’s in it for me now,” rather than the future when shopping for food ingredients. With that in mind, try displaying your produce in “alternative” categories, such as “Fast cooking,” “Microwave friendly,” “Portable,” “Eat raw or cooked,” or “Easy addition to soups and stews.”

9. Does your farm offer a SNAP CSA? For more information regarding how to set up a SNAP CSA, go to www.oregonsnapcsa.com and download “A Training Guide for Farmers, developed by Zenger Farms. Have you thought about using the farmers’ market as a pick-up site? Consult your market manager about this.

10. Toot your horn! Promote yourself and your products. Do some of your own community outreach. Sites to consider include health clinics, community centers, schools, food pantries, and low-income housing sites. Contact your local OSU Extension office for help getting started.

Thanks to the following people who contributed to this list: Maureen Quinn, OSU Extension Service, Family Community Health, Washington County; Kristin Frost-Albrecht, OSU Extension Service Family Community Health, Clatsop County; Kathleen Finneran, OSU Department of Anthropology; Sarah Broderick, Farmers’ Market Manager, Zenger Farm; Suzanne Briggs, Collaboration.

USDA's National Animal Health Monitoring System has published two new informational sheets from the Sheep 2011 study

Lambing Management Practices on U.S. Sheep Operations, 2011
and
Vaccination Practices on U.S. Sheep Operations, 2011

The info sheets are available online at <http://www.aphis.usda.gov/nahms>

Pregnancy Ketosis

By: Susan Kerr, WSU NW Regional Livestock and Dairy Extension Specialist

New producers of small ruminants often learn about pregnancy ketosis first time the hard way—with a dead dam, fetuses or both. This article explains the causes of pregnancy ketosis (a.k.a. toxemia) and more importantly—how to prevent it.

Sheep and goat fetuses add 70% of their final birth weight in the last six to eight weeks of gestation. A singleton increases a dam's nutritional requirements by 1.5 to 2 times maintenance in the last trimester. Multiple fetuses greatly increase energy demands on their mother: twins require 1.75 to 2.5 times maintenance requirements and triplets demand up to 3 times maintenance. Twins and triplets are common in some breeds of sheep and goats; quadruplets and even more are not uncommon in Boer goats, Finnsheep and Romanov sheep.

Concurrent with a pregnant dam's increasing nutritional needs, her physical capacity for feed intake is reduced by the rapid abdominal expansion of her pregnant uterus. Without managerial changes, the dam will be unable to ingest the calories needed to support herself and her fetuses, sending her into negative energy balance. Detecting a drop in blood glucose levels, her body's regulatory systems will liberate energy from reserves stored as body fat. The release of stored energy will address her low blood glucose issues (remember the Krebs cycle?), but not without side effects: by-products of fat mobilization called ketone bodies can accumulate to toxic levels and suppress appetite. Without intervention and sometimes despite it, affected does or ewes may spiral downward in a fatal negative energy balance, taking their unborn fetuses with them.

Besides multiple fetuses, health and management factors can predispose a pregnant ewe or doe to ketosis during pregnancy. For example, if there isn't enough feeder space, timid individuals may not be able to eat their fair share of the ration. Lameness or other health issues may prevent affected animals from walking to food or standing to eat. Thin does or ewes already lack sufficient nutrients to maintain themselves, let alone grow a fetus or three; they are predisposed to ketosis



This ewe had milk fever, but advanced pregnancy ketosis would present similarly: a down and depressed animal with poor appetite. Lack of complete recovery after calcium treatment and results of ketone tests would help differentiate these two conditions. Also, milk fever usually occurs after lambing and pregnancy ketosis before. Photo courtesy Susan Schoenian, University of Maryland Extension.

as pregnancy progresses. Any issue that causes a late-term pregnant doe or ewe to have reduced feed intake even temporarily—transportation, shearing, inclement weather, etc.—can result in ketosis. This is especially true for overconditioned animals; fat mobilization can cause fatty infiltration of the liver and fatal ketosis after a relatively minor period off feed. Large amounts of intra-abdominal fat in obese sheep and especially goats further limit free space in the abdomen for the rumen to expand into to receive a high-fiber diet.

Signs of pregnancy ketosis (Photo 1) are initially subtle and include depression, lethargy, poor appetite, dull eyes, low fecal output, changes in behavior and general “slowness.” As the condition progresses, affected animals may manifest tremors, circling, teeth grinding, blindness, wandering, star gazing and incoordination progressing to recumbency, coma and death.

Managers can monitor and/or diagnosis individuals for ketosis through the use of urinary ketone detection strips, blood ketone tests and/or checking the breath for a fruity or acetone smell (although not every person can smell this). Early cases that are still eating can be given more energy (molasses, more grain, better quality hay) and two to three ounces of propylene glycol orally every eight to 12 hours until birthing; this substance is converted to energy by ruminants. Detection of the first

case of ketosis should motivate a producer to re-evaluate the herd's ration, assess body condition scores (BCSs) of all pregnant animals (Figure 1) and make adjustments as needed.

If a pregnant doe or ewe totally stops eating due to ketosis, her outlook declines greatly. Traditional treatments include intravenous dextrose and oral propylene glycol. Recent additions to treatment protocols may include the use of calcium, potassium, sodium bicarbonate, ionophores, flunixin, probiotics and thiamine. Few of these medications are approved for use in sheep or goats, so they must be used under the guidance of the farm's veterinarian. Labor induction or a C-section may be warranted as well. The purpose of these actions is to remove the source of energy drain on the dam (i.e. the fetuses), but the fetuses are often sacrificed in the process or already dead.

Prevention of pregnancy ketosis includes giving pregnant does and ewes a more energy-dense ration beginning in the last four to six weeks of pregnancy. This dietary change should begin slowly and increase gradually. Using the results of ultrasound pregnancy tests, individuals can be separated, fed and managed as a group, depending on the number of fetuses they are carrying. Does and ewes pregnant with twins and triplets will require a more energy-dense diet than those with singletons. Those with singles still need to be monitored, but could grow excessively fat on the higher-energy ration required for twins and triplets. Exercise helps prevent obesity and improves muscle tone. Providing feed, salt, water and housing in separate areas will force animals to move more than they might choose to do voluntarily.

Aim for BCSs of 3.5 at birthing. If animals are overweight, late pregnancy is not the time to take the

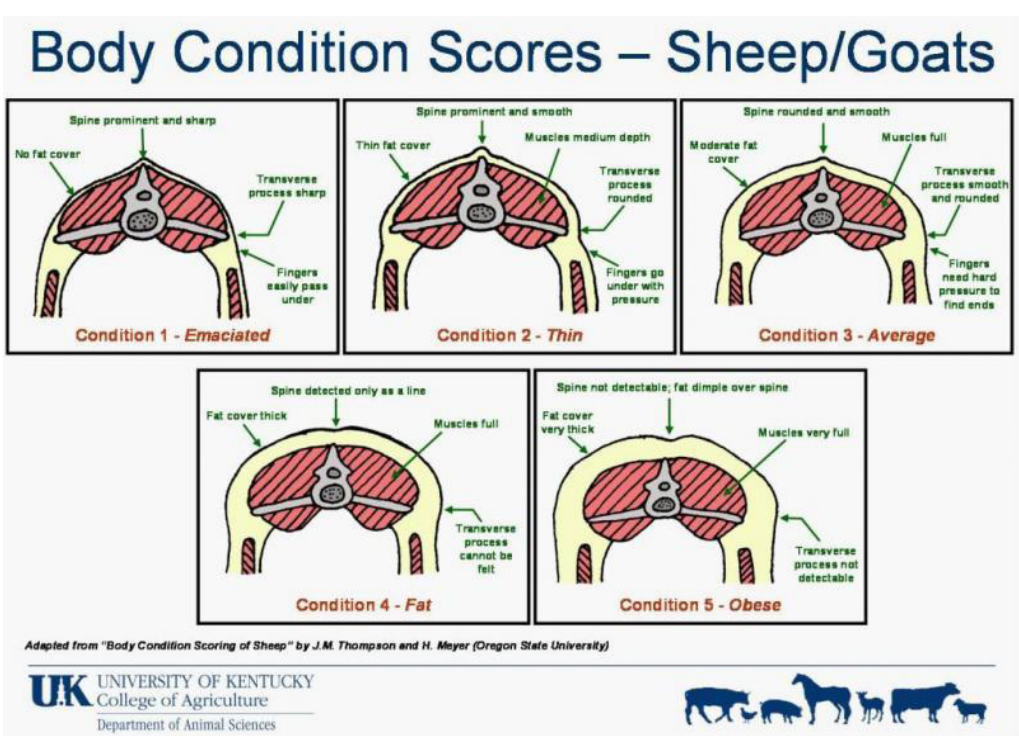



Figure 1. Body Condition Scores-Sheep/Goats. From "News to Ewes: What Do Ewes Need to Be Ready?" by Donald G. Ely, HoofPrint: The Small Ruminant Magazine, Vol 12 (Summer, 2013):22-25. Used with permission.

extra weight off; keep them eating well and monitor closely because they are at elevated risk for ketosis. Animals with BCSs below 3 should be identified and fed to improve body condition before birthing so neonatal vigor, colostrum production and lactation are not compromised. Depending on BCS and the number of fetuses being carried, individual animals may require 0.5 to three pounds of energy concentrate per day, often averaging one pound per fetus. Dividing the concentrate into two or three meals per day fed after hay is best for rumen health.

Given the close profit margins achieved by small ruminant producers, it is essential to understand pregnancy ketosis and how to prevent it. Experiencing it once is enough for a lifetime. 

Additional Reading

Goat Medicine by Smith and Sherman. Wiley-Blackwell, 2009, 2nd. ed. ISBN-13: 978-0-7817-9643-9.
 Sheep and Goat Medicine by Pugh and Baird, 2nd. ed., 2012. Elsevier ISBN 978-1-4377-2353-3.
www.sheepandgoat.com/articles/pregtox.html
<http://tinyurl.com/kksl64p>
<http://ir.library.oregonstate.edu/xmlui/bitstream/handle/1957/14303/ec1433.pdf>

15 Ways to Help Mitigate Drought on your Farm this Season and Beyond

By: Maud Powell, Small Farms Program, Oregon State University

Last month, Governor Kitzhaber declared drought emergencies for four counties in Southern Oregon. As of this week, most of the state is considered to be in either a moderate or severe state of drought by the United State Drought Monitor. Farmers across Oregon are planning for a year with less than ideal irrigation conditions. Those farmers that rely on water from creeks or rivers face greater challenges than those who irrigate from reservoirs. Even if we continue to receive rain this spring, lack of adequate snow pack will cause shortages in many watersheds.

Most growers already have their farm plan set for the year and have considered the effects of drought for the upcoming season. Following is a list of ways to help mitigate the effects of drought for the coming year, along with some ideas about how to make a farm more drought-proof over the long haul.

Irrigation

1. Take a look at all types of irrigation systems that may be appropriate for your operation and pick the one that will conserve the most water. In many cases, this may be drip irrigation. Research has shown that drip tape uses 30-50% less water than overhead irrigation.
2. Build a water storage system that holds water for use during irrigation season. Contact your local Water Master to find out the legalities of building ponds on your farm. Storage tanks that collect rainwater from rooftops can also provide reserve water.
3. Understand the water scheduling needs of your crops. Many farmers tend to overwater, so make sure you are watering at the most appropriate intervals for your crops. For example, onions and beans will take better advantage of more frequent waterings at shorter durations.
4. Store water in ditches along fields.
5. Install measurement devices that track your water use.
6. If possible, utilize water from deep aquifers instead of surface water.

Soil

7. Leave crop residue your field (conservation tillage) to improve the water-holding capacity of your soil and reduce evaporation and erosion.
8. Use conservation practices that reduce runoff and encourage infiltration of water into the soil.
9. Closely monitor soil moisture and irrigate accordingly.
10. Maintain and establish riparian buffers, filter strips, grassed waterways, and other types of conservation buffers near streams and other sources of water.
11. Consider plowing with a subsoiler, ripper or Key-line plough that will increase water-holding capacity of soil and help to build topsoil.
12. Reduce the amount and depth of tillage. Moisture loss increases with both the number of passes and the depth of tillage.
13. Increase the organic matter in your soil through the application of compost, growing and incorporating cover crops into your soil, and growing green manure crops. Soils with more organic matter have a great water-holding capacity.

Crops

14. Plant species and varieties of crops that withstand dryness, hold water, and reduce the need for irrigation. Melons, tomatoes, squash and beans are better suited to dry conditions, while lettuce, brassicas and corn rely on moister conditions to thrive. Consider front-loading early season crops. Some farmers are planting more early successions and waiting to see if they have enough water to plant fall and winter crops.
15. Mulch with straw or cardboard. Mulching with organic materials may not be feasible on a large scale, but can be highly effective for smaller plantings. Larger farms use black plastic mulch, laid out with a tractor, to manage weeds and retain soil moisture.



USDA Regional Climate Hubs: Managing your risk in a changing climate.



Climate Risks in the Northwest

What type of agricultural production is in the Northwest?

Agriculture in Oregon, Washington, and Idaho produces three percent of the region's gross domestic product, over half of the nation's potato crop, and around 17 percent of the nation's wheat and 11 percent of the nation's milk. Nearly a quarter of the land area in these states is agricultural. Timber remains a substantial contributor to the economies of all four states in the region. In Alaska, farming is largely confined to the Matanuska Valley and an area east of Fairbanks, but timber, fish, game and other biological resources are important throughout the cash economy and essential for many subsistence users, especially in rural areas. The importance of agriculture to the region is demonstrated by the fact that over the past 30 years, less land has been converted from agriculture here than elsewhere in the U.S. These lands and their resources are valued locally, regionally, and nationally.

How are climate change and weather variability affecting Northwestern producers?

Producers and landowners in the Northwestern U.S. are facing challenges of a changing climate and increased weather variability already, and altering their management decisions as a result. Examples of climate and weather impacts include:

- **Reduced Snowmelt:** Northwest growers know that winter snowpack is essential for meeting irrigation needs in the spring. Higher temperatures can result in earlier snowmelt and more rain rather than snow in the mountains, leaving less water flowing during the growing season. This has been the trend since the 1980s, and researchers predict that it will continue.
- **More Frequent Fires:** Wildfires have increased in the last decade and are predicted to increase even more, reducing timber yields, altering wildlife and fish habitats, increasing the risk of soil erosion, and expanding the range of invasive annual weeds on public and private rangelands.
- **Higher Temperatures and Drought:** Temperature and precipitation changes can produce drought, heat stress to crops and livestock, and increases in plant diseases, pests, insects and weeds. Drought in the Northwest can stress forest vegetation and favor outbreaks of bark beetles and other pests, leaving broad swaths of dead trees. On the Kenai Peninsula in Alaska, a spruce beetle outbreak caused massive tree mortality that started in 1980's and continued for the next 20 years. Models predict that as temperatures increase, spruce forests in Alaska will be at greater risk due to continued beetle outbreaks.



What is USDA doing about it?

USDA has established the USDA Northwest Regional Climate Hub (NRCH), located in Corvallis, Ore. This multi-agency effort (Agricultural Research Service, Forest Service, Natural Resources Conservation Service) is being led by Beatrice Van Horne, a Program Manager at the Forest Service Pacific Research Station. The Hub will deliver science-based knowledge and practical information to farmers, ranchers, and forest landowners that will help them to adapt to climate change and weather variability by coordinating with local and regional partners in Federal and state agencies, universities, NGO's, private companies, and Tribes.

The Hub will provide:

- Technical support for land managers to respond to drought, heat stress, floods, pests, and changes in growing season.
- Regional assessments and forecasts for hazard and adaptation planning.
- Outreach and education for land managers on ways to mitigate risks and thrive despite change.

Building on success stories

Risk Management in Natural Systems: The Pacific Northwest Research Station of the U.S. Forest Service is identifying forest and range ecosystems at risk from climate change and evaluating options to avoid consequences. Examples include incorporating causes and consequences of above- and below-ground water flows into planning, maintaining forest connectivity to preserve habitat for wolverine, marten and lynx, and thinning forests to improve drought and fire resistance.

Water Supply Forecasting: The Natural Resources Conservation Service's Snow Survey and Water Supply Forecasting Program operates cooperatively with public and private partners. Partners help to support the collection of snow-related climate data as part of a network of 1,180 manually measured snow courses and 885 automated snow telemetry (SNOTEL) sites. The data are used to identify changes in snowpack and develop water supply forecasts and outlooks for management of irrigation water, reservoir management for municipal water supplies, hydroelectric power generation planning, recreation and many other uses.

Cereal Adaptation to Climate Change: ARS is cooperating with land-grant universities in the "Regional Approaches to Climate Change for Inland Pacific Northwest Agriculture" (REACCH) project to increase the capacity of Inland Pacific Northwest cereal production systems to adapt to and mitigate climate change. ARS scientists and programs in the Pacific Northwest area are also developing regional models and tools to: improve hydrologic forecasting in snow-dominated systems of the Pacific Northwest; predict regional soil erosion in forest and rangeland ecosystems; develop adaptive management strategies to rehabilitate burned areas and restore weed-invaded rangelands; and improve productivity of Pacific Northwest agricultural and range lands under current and potential future climate conditions.

Need more information?

USDA Regional Hub Leader

Beatrice Van Horne
USDA Forest Service
Pacific Northwest Research Station
3200 SW Jefferson Way
Corvallis, Ore.
(541)-750-7357
bvhorne@fs.fed.us

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What's up in the North Willamette Valley Small Farms Program this Season?

By: Heidi Noordijk, Small Farms Program, Oregon State University

Vegetable degree-day modeling, variety trials, composting workshops, and small-scale farming are going to keep the Small Farms Program in the North Willamette Valley busy this season.


CROPTIME is a vegetable degree-day modeling project. Development rates of vegetables along with many other plants, insects and fungi are strongly temperature dependent. we are developing temperature based (degree-day) growth models to help growers with crop planning. Nearly all seed catalogs use days to maturity as a harvest predictor but this estimate varies widely depending on region (Florida vs. Alaska) and time of year (spring planting vs. mid-summer planting). When it is cold their development rates slow down, when it is warmer their development rates speed up (within limits). Degree-day data is being collected for over 60 varieties of vegetables and 6 weed species in the Willamette Valley. Eleven crops and 43 vegetable varieties will be grown at the North Willamette Research & Extension Center (NWREC) and growth stages will be recorded weekly. Growth stage differences on tomatoes and peppers grown with and without black plastic will also be compared. This information will be used, along with data from trials at the OSU vegetable farm and on-farm observations, to develop degree-day models for these varieties. Look for workshops and conference sessions on CROPTIME in late 2015 or 2016.

This will be the first year in a long time that OSU has hosted public vegetable variety trials at NWREC. Cutting celery, habanero peppers, Brussels Sprouts, golden beets, cilantro and Thai basil variety trials will be grown and evaluated for horticultural traits, appearance and flavor. Local famers and chefs will get together to evaluate crop performance and culinary attributes. Evaluation information will be provided to local breeders to select for traits that local farmers and chefs want to see. This is a pilot project that we hope to expand in the future. A field day to showcase the varieties will take place in late summer/early fall and

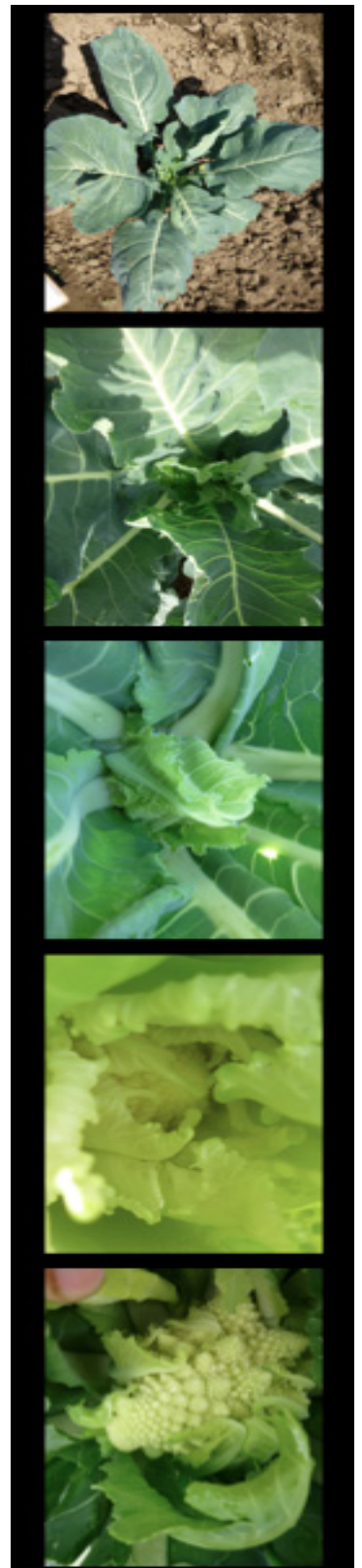
will be announced in the summer issue of Oregon Small Farm News.

Looking to the future we are developing a Learning Farm at NWREC. We plan to offer hands-on workshops to develop the farming skills of first generation beginning farmers. Workshop topics may include:

- Cover cropping and soil fertility
- Irrigation set up and management
- Pest management
- Crop planning and scheduling, farm layout, rotations
- Propagation, transplanting and seeding
- Harvest and post harvest handling and storage
- Tractor operation, toolbars and equipment for the small farm

Please contact [Nick Andrews](#) or [Heidi Noordijk](#) from the North Willamette Small Farms Program for more information on these projects (503-678-1264). 

Development of Veronica Romanesco throughout the season.
Photos by Heidi Noordijk



Food Safety Modernization Act Update

By: Lauren Gwin, Small Farms Program, Oregon State University

Add a note to your summer “to-do” list: “Weigh in on FSMA. Again.”

In January, the U.S. Food and Drug Administration (FDA) announced it will revise and then allow another round of public comment on elements of two key Food Safety Modernization Act (FSMA) rules: Produce Safety and Preventive Controls for Human Food. This was welcome news to tens of thousands of farmers and others who had many concerns about the proposed rules and submitted comments during the first round of rulemaking last fall.

FDA expects to publish revised rule language for specific parts of the two rules early this summer, followed by a public comment period. While the summer is not a good time of year for farmers to focus on anything but farming and marketing, we encourage you to learn about and weigh in on the revisions.

What will be revised?

FDA only plans to revise and offer alternative approaches for key provisions that raised the most concern: water quality standards and testing, standards for the use of raw manure and compost, animal grazing and animal intrusion, certain requirements related to “mixed-use” facilities, and procedures for the withdrawal of qualified exemptions.

In mid-March, the Agency offered what is effectively a “sneak peak” at the new alternatives they are considering. In response to concerns about the environmental impacts of the proposed rules, FDA will prepare an Environmental Impact Statement (EIS). The first step is “scoping”: making sure they have a full list of topics the EIS must address.

In a Federal Register notice about the public scoping period for the EIS (which ends on April 18) FDA outlined new alternatives for the standards related to water, manure and compost, animal grazing/intrusion, and even the \$25,000 threshold for farms to be covered by FSMA at all.

For example, regarding the microbial standard for


agricultural water, a new potential alternative is “a flexible water quality standard that allows for adjustment to a specified microbial quality standard based on mitigation steps that occur after application of agricultural water and prior to consumption.” As an example, FDA points to a World Health Organization guideline that differs for leaf crops and root crops.

Regarding the interval required for application of raw manure and compost, a new potential alternative is to use the National Organic Program application intervals.

These and other new alternatives are laid out in Table 1 of the Federal Register notice, which you can find [here](#). [Scroll down to “Tables,” under “Table of Contents,” and click on “Table 1.”]

This Federal Register notice is not, by any means, FDA’s official announcement of the new alternatives it is considering. But it is a preview of things to come. We will keep you posted and offer analysis of the revisions as they become clearer and official.


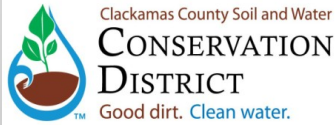

Stay tuned. 



**Agricultural Composting
Resources & Education
Series**

April 24 and May 1
Thursdays from 8:30am - 5:00pm

For more information:
<http://smallfarms.oregonstate.edu/ag-compost-workshop>



New Network Launches For Transitioning Farmers

Oregon growers who are transitioning to organic production will soon have their own network for guidance and information. Oregon Tilth's Transitioning Farmer Network will provide tools, training, and technical assistance for farmers in transition, and those adding organic acreage or diversifying production. The Network will provide consultation with organic specialists, advice from experienced organic producers, and a forum to exchange ideas with other transitioning farmers.

Transition to organic can be a promising opportunity for Oregon farmers. Buyers point to large supply gaps for regionally grown organic crops, and wholesale prices for organic fruit and vegetables can be 50 to 100 percent higher than conventional. Organic food is now a \$35 billion market, and sales of organic fruits and vegetables are growing by 12 percent each year. Oregon has the fourth highest sales of organic fruit in the country and is second only to California in organic vegetable sales. Organic grain and soybeans are also in short supply, with food and feed manufacturers reporting major shortages of organic raw materials.

The USDA requires farmers to wait three years before becoming organically certified, but during this time they can't access organic price premiums. Many transitioning farmers will invest in additional equipment, land, and labor. Yields may decrease at first, as farmers switch to biologically based methods of building soil, cycling nutrients, and managing field ecology. Transitioning farmers also have to navigate new channels for processing, distribution, and marketing.

The Transitioning Farmer Network will help farmers address these challenges while they grow successful organic enterprises. Members will get one-on-one help planning and managing transition or expansion, and they can ask questions and share experiences on the Network listserv. The Network will include a diverse group of experts, including Oregon Tilth staff,

specialists from OSU's Center for Small Farms and Community Food Systems, and experienced farmers who will serve as mentors and guides. Members will also learn how to access USDA resources such as CSP and EQIP that can provide valuable financial and technical assistance.

The **Transitioning Farmer Network** is open to Oregon farmers who are in transition, planning to transition this year, expanding organic acreage, or diversifying their organic enterprises. Applicants should have been in production for at least five years. The 2014 cohort will be limited to producers of horticultural and agronomic crops.

There is no fee to join but there is limited space. Interested farmers can fill out an application at: <http://tilth.org/files/TFNapplication> The deadline to apply is April 10, 2014, but late applications may be accepted: please contact Sarah Brown, 503-779-6557, sarah@tilth.org.

Porcine Epidemic Diarrhea Virus 2014

Help Oregon Take a Stand Against a New Deadly Pig Disease. To find out more about this Important Swine Health Alert visit.

<http://smallfarms.oregonstate.edu/PorcineEpidemicDiarrheaVirus>

Growing pains to gains in Willamette Valley

The history and future of farming in the Willamette Valley

By: Nathan Kirkpatrick, Ewing Irrigation

The Willamette Valley has been an agricultural paradise for hundreds of years. It is made up of several distinct ecosystems and is home to 61 species of fish, 250 species of wildlife and thousands of species of plant life. It is the nation's largest producer of hazelnuts and cranberries and one of the largest producers of Christmas trees, nursery stock and grass seed.

As successful as farming has been in the region, it has also contributed to environmental problems and faces serious challenges. But with more farmers become focused on sustainability, new innovations are making the future look bright for farming in Willamette Valley.

Native Farming

Long before Lewis and Clark's journey began, there were an estimated 100 Native American tribes living throughout the Willamette Valley. The Calapooya—a large group of several tribes that lived independently of each other—managed the land for hundreds, if not thousands of years by digging, tilling, planting a variety of crops and changing the landscape to favor a diverse plant and animal population. By burning large portions of land they promoted new growth and vegetation for large game, and even collected the burnt and blackened insects for food.

Tarweed (a native sunflower), acorns, hazelnuts, strawberry, blackberry, elderberry, salmonberry, salal berry, huckleberry, wild plums and cherries, wild onions, parsnips, wapato (a potato-like root), and camas—a once common starchy bulb that is said to taste like a warm baked pear—made up the majority of what the native people harvested.

As native people grew and harvested local food to sell to the early pioneers, they paved the road for what would become modern agriculture in the state of Oregon. Most of the best wapato fields were located in what is now Portland, and natives harvested and sold the roots during the winters at Fort Clatsop, the

encampment of the Lewis and Clark expedition. When the Lewis and Clark expedition ended in 1806, news of their success traveled quickly and more people began to make the treacherous journey west.

A Changing Landscape

In 1824, the Hudson Bay Company established Fort Vancouver. This was the first attempt at a self-sustaining commercial farming operation in the region, and they immediately began planting grain and orchards and raising sheep and cattle. They also established dairies on Sauvie Island to supply milk, butter and cheese to the community. As a reward for their service, retirees of Hudson Bay were given land to farm in the area known as French Prairie in the Willamette Valley. This news had people literally “jumping on the wagon” to head west, and in the 1830s the Oregon Trail movement began.

During the California Gold Rush, the Willamette Valley was in a unique position to market and supply food to the miners in California, and Willamette Valley farmers became more wealthy selling food to the 49ers than the 49ers made from finding gold!

Technology Triumphs

At the turn of the 19th century, mechanized farming, horses and other animals began to take the place of manpower. Steam and gasoline powered equipment replaced laborious jobs that were once difficult and time consuming. The introduction of mechanical equipment to harvest grasses more efficiently prompted an increase of wheat production and the ability to grow and harvest more feed for livestock.

Marquis De Lafayette Remington of Woodburn, Ore. patented the first steam-powered tractor in 1888. He developed a tractor that was able to work in the soft wet ground of the Willamette Valley nicknamed the “Rough and Ready,” and it changed the way modern farming was done in Oregon and beyond.

In 1938, the Bonneville Dam, a power station on the Columbia River, began producing power for the area, leading to the introduction of pumps and electrical equipment. Irrigation pumps were used to move water and irrigate lands that could not be reached up to that point. Soon, areas east of the Willamette Valley and Cascades that were otherwise considered too dry to farm became prime wheat lands. In the following years, wheat became Oregon's top exported crop and remains one of the highest today. Areas within the Willamette Valley also began producing a larger variety of crops due to irrigation.

The Price of Progress

As the evolution of agriculture in Oregon continued into the 20th century, so did the advancements in petroleum based pesticides and herbicides. At the time, there were little or no restrictions for dumping raw waste directly into the Willamette River. Industrial wastes and agricultural runoff, including excessive pesticides, contributed to high levels of pollution in the river. Some sections of the river became so polluted that they could no longer support aquatic life. By the 1930s, it became obvious to people the effects of dumping waste into the river could not be ignored.

In 1938, the people of Oregon passed the Purification and Prevention of Pollution Bill. Newly constructed dams on the tributaries of the Willamette were used to dilute (rather than purify) the water to safer levels, and agreements with local farmers were created to avoid water shortages in the summer months. In the 1960s a renewed effort reduced industrial river pollution, but runoff from agricultural and urban areas still impacts the river.

Today, the levels of toxins found in parts of the river make it unsafe to eat the resident fish, or swim during times of high pollution. The Department of Environmental Quality estimates it will take 20 years to return the river to safe bacterial levels and 50-100 years to return the level of mercury to a level that is safe to consume fish.

Growing Towards Sustainability


People have become increasingly concerned about not only what they eat, but where their food comes from. In 1984, Oregon Tilth was established in Willamette

Valley and is currently one of the largest organic certifiers in the country.

Since the early 90s, small farms and local farmers' markets that provide fresh, locally grown, organic food to consumers have been increasing in number and popularity every year. Many farmers have a desire to practice sustainable farming techniques today because they realize, as stewards of the land, the importance of maintaining healthy ecosystems for the next generation of farmers.

Alternatives to petroleum based fertilizers and pesticides are becoming more popular. Companies like BioOregon are developing natural organic fish based fertilizers that work to build up soil, rather than deplete them of nutrients year after year. And in Portland, Clean Water Services and Ostara Nutrient Recovery Technologies have constructed the world's largest municipal facility to extract useable nutrients from wastewater for use as fertilizer.

Growing food today has become an applied science. Farms are equipped with weather stations that monitor and automatically adjust watering schedules based on the irrigation needs of a specific crop. These stations help detect moisture loss due to wind and evaporation, air temperature, real-time soil moisture levels, and can prevent irrigation if it starts raining. High efficiency irrigation spray heads and drip emitters are also replacing large impact guns and field flooding, which helps reduce wasted water, fertilizer needs and runoff into the river system. Another advancement, pH meters, are being used to test soil conditions so farmers can adjust the soil pH to control disease and increase the vitality of crops without the use of excessive chemicals.

Each year brings advances in technology and education. With these advances, farmers and residents have the opportunity to lead the country in sustainable practices and keep the Willamette Valley an agricultural paradise for generations to come. 

Author Nathan Kirkpatrick is a manager for Ewing Irrigation in Hillsboro, Ore., which provides irrigation, landscape and agricultural products. He can be reached at nkirkpatrick@ewing1.com or 503.533.5656.


Food Safety Train-the-Trainer Workshops Available

By: Philip Gütt, Oregon Strawberry, Oregon Raspberry and Blackberry Commissions

For the third year, the Oregon berry industry in collaboration with the OSU Extension Service, is offering food safety “train the trainers” workshops around the state. The purpose of the program has been to provide all produce industry growers and managers with training materials that can be used to teach basic food safety and handling principles to their harvest field workers. The Oregon Blueberry Commission, Oregon Strawberry Commission, and the Oregon Raspberry and Blackberry Commissions sponsor the workshops and have provided the funding, with the help of two Specialty Crop Block Grants, for the free trainings each year.

This project is a direct result of an *E. coli* outbreak occurring from contamination during harvest in a strawberry field in 2011. According to Philip Gütt, administrator for the Oregon Strawberry and the Oregon Raspberry and Blackberry Commissions, “Our goal is to minimize the chances of future contaminations by educating harvest crews in basic field handling of Oregon’s produce. Consumers make food purchases based on their trust in a product. We need to ensure that Oregon produce continues to be universally recognized as a safe product to eat.”

Luisa Santamaria, North Willamette Research & Extension Center’s Nursery Pathologist and Bilingual Educator, teaches the three-hour long workshops. She utilizes California Strawberry Commission’s training materials and resource kits that each participant receives to use with workers on their farms. Also, she demonstrates teaching methods and hands-on activities that can be used by the trainers when working with their employees.

“Food safety is job number one for our fresh fruit and produce industries. We all need to take responsibility for ensuring the food products that come from our fields and farms enter the market free of any contamination,” said Santamaria. This year’s workshop schedule covers 18 locations. Each location will include an English workshop in the morning and a Spanish workshop in the afternoon. Advance registration for these free workshops and additional details can be found at oregonfarmsfoodsafety.com. 



From the Ground Up Farming Program

OSU Extension Service, the Small Business Development Center and Lane Community College are teaming up to offer classes designed for beginning farmers and others interested in expanding their knowledge about agriculture opportunities on a small-scale.

The classes will be held at the Lane Community College campus at 4000 East 30th Avenue, Building 17 in Eugene each month from 6:00-9:00pm. Each class costs \$35.

Apr. 9 - Growing Vegetables

May 14 - Marketing and Processing Your Farm Products

Jun. 4 - Diagnosing Plant Problems

To learn more about each of the classes read the *class descriptions* available at <http://smallfarms.oregonstate.edu/south-valley/events>

To register call Lane Community College’s Small Business Development Center at (541) 463-6200.



Calendar



April

9 - Growing Veggies

A gardening class that goes deeper. From variety selection to planting and from fertilizing to harvesting, discover all that goes into growing vegetables. The information from this class can be easily transferred to those interested in diversified fresh vegetable production as a small business venture. 4000 E. 30th Avenue, Building 17, Eugene, OR 6:00 PM - 9:00 PM. LCC Small Business Development Center by calling (541) 463-6200. **\$35**

10 - Growing Agripreneurs Small Farm Workshop

Beginning farmers interested in pursuing a farming career will have the opportunity to experience a farming season and receive direct consultation on their own projects. OSU Southern Oregon Research and Extension Center, Jackson Co, Research Library, 569 Hanley Rd, Central Point, OR. 6:00 PM. 541 776 7371 or maud.powell@oregonstate.edu **\$180 for 12 part series**

May

6 - Living on the Land

This four part series is tailored for small acreage landowners. Topics covered are soils, planning, wells, septic system, water rights, forage, mud management and more. 91232 North Coburg Rd, Coburg, OR. 6:00 PM - 8:30 PM. For more information

contact Chrissy Lucas at 541-766-3556. **\$20 per person or \$30 for a couple**

12 - Local Food Connection

Come away with an understanding of wholesale and direct marketing channel options for the crops and livestock you produce. Case studies will show how some local farmers use multiple marketing opportunities. Learn about some of the food safety, licensing, and processing requirements for selling agricultural products. Develop some next steps for your farming venture. 4000 E. 30th Avenue, Building 17, Eugene, OR 6:00 PM - 9:00 PM. LCC Small Business Development Center by calling (541) 463-6200. **\$35**

June

4 - Diagnosing Plant Problems

As people grow different crops, these crops magically have a lot of different problems appear. This class will help you diagnosis plant problems. We will be looking at the myriad of insects, weeds, diseases, viruses that can affect the tree fruits, berries, vegetables and ornamental plants. 4000 E. 30th Avenue, Building 17, Eugene, OR 6:00 PM - 9:00 PM. LCC Small Business Development Center by calling (541) 463-6200. **\$35**

<http://smallfarms.oregonstate.edu> for more upcoming events!

Want to add your event to our calendar then please submit your information at <http://calendar.oregonstate.edu/advanced/list/extension-smallfarms/> "Click the Submit an event button." Events have to be approved and will not immediately post. If you have questions please contact Chrissy Lucas at Chrissy.Lucas@oregonstate.edu or 541-766-3556