

# Oregon Small Farm News

Oregon State University Small Farms Program

Spring 2015



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## OSU Extension Service Small Farms Program

Garry Stephenson  
Extension Small Farms Specialist  
Corvallis, OR 97331

Lauren Gwin  
Extension Food Systems Specialist  
Corvallis, OR 97331

Nick Andrews  
Clackamas & Washington Counties, 15210 NE Miley Rd  
Aurora, OR 97002  
503-678-1264

Melissa Fery  
Benton, Linn, & Lane Counties, 4077 SW Research Way, Corvallis, OR 97333  
541-766-6750

Amy Garrett  
Benton, Linn, & Polk Counties, 4077 SW Research Way, Corvallis, OR 97333  
541-766-6750

Maud Powell  
Jackson, Josephine, & Douglas Counties, 569 Hanley Rd, Central Point, OR 97502  
541-776-7371

Heather Stoven  
Yamhill County, 2050 NE Lafayette Ave, McMinnville, OR 97128

Toni Stephen  
Central Oregon, 3893 SW Airport Way  
Redmond, OR 97755  
541-548-6088 x 7959

Chrissy Lucas  
Small Farms Program Assistant, 4077 SW Research Way, Corvallis, OR 97333  
541-766-3556

Heidi Noordijk  
Program Assistant, Clackamas & Washington Counties, 15210 NE Miley Rd, Aurora, OR 97002  
503-678-1264

Rachel Suits  
Program Assistant, Hood River County, 2990 Experiment Station Dr  
Hood River, OR 97031  
541-386-3343

### Cover Photo:

Farmall Cub at Square Peg Farm.  
Photo by Garry Stephenson

Oregon Small Farm News Layout by: Chrissy Lucas

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# Building Soil: A Down-to-Earth-Approach

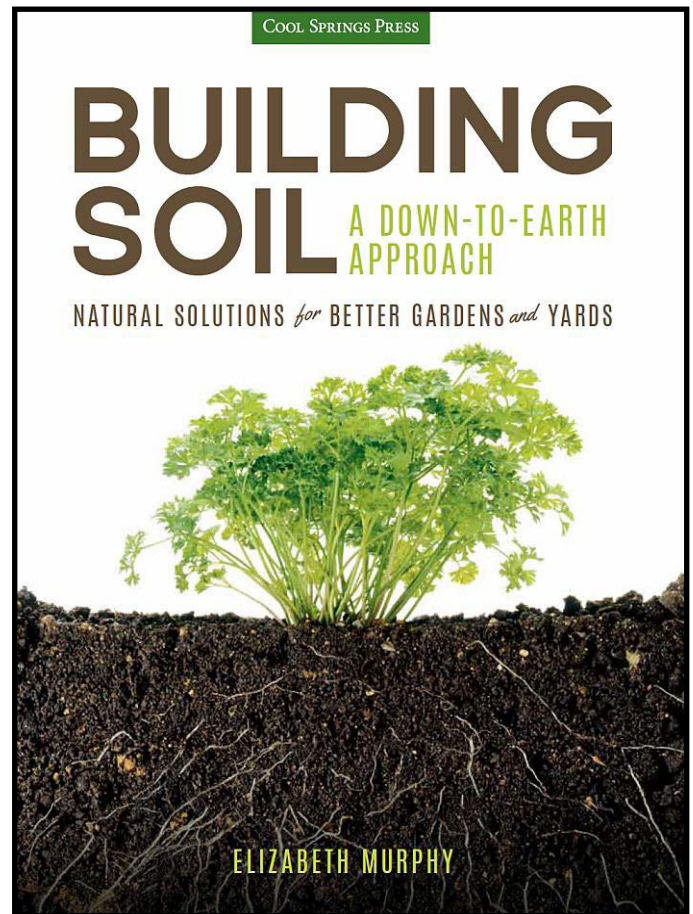
*A New Book by Our Own Ea Murphy*

**F**ormer OSU Small Farms instructor for southern Oregon, Ea Murphy, has written a new book.

How do you recognize healthy soil? When and why should you fertilize, till (or not till), weed, and water? What's the secret to using cover crops and amendments to transform poor soils? How can you work less and grow more?

The answer to these questions and more lies in seeing not just the plants, but the whole, living system that grows them. *Building Soil: A Down-to-Earth Approach* is a common-sense, practical guide for the care and feeding of your living soil. Written for gardeners, farmers, and soil lovers of all stripes, *Building Soil* puts a whole soil perspective into practice by explaining the secrets of soil organic matter; guiding fertilizer and fertility choices; providing step-by-step instructions for growing your own amendments; and simplifying how and when to mulch, water, weed, and till. By working with whole, living soils, *Building Soil* reduces work and improves productivity, creating more sustainable gardens, cities, and farms for a better planet.

Written by former OSU faculty, gardener, soil scientist, and farm lover Elizabeth (Ea) Murphy, *Building Soil* draws on more than a decade of growing, teaching, and soils research. You can follow her soil lover's blog and visit her book page at Dirty Little Secrets, [www.dirtsecrets.com/building-soil](http://www.dirtsecrets.com/building-soil). 



# 2015 OSU Small Farms Conference Recap

By: Garry Stephenson, Small Farms Program, Oregon State University

**I**t had everything: a big crowd of farmers and organizations that support farmers, great educational sessions including in-depth tracks, an excellent locally sourced lunch, networking while “thinking with a drink,” and a farmer “killing it” on a carrot clarinet. All that.

The 2015 OSU Small Farms Conference set a record for attendance. Based on some registration tweaks that allowed us to make more efficient use of space, we allowed attendance to exceed our normal cap of 800. Instead, 900 attended.

Lunch included dishes made from locally purchased ingredients including dried bean salads, leafy salads, ham, cheeses, and sandwich bread. Farms supplying lunch items included Lonely Lane Farm, Denison Farms, Lonesome Whistle Farm, Gathering Together Farm and more.

Starting the day with a song no one will forget was Bryon Dickerson of Dancing Roots Farm. As we set out to organize the conference, we



Bryan Dickerson “killing it” on the carrot clarinet.  
Photos by Deanna Lloyd





had a goal of having a farmer create and play a carrot clarinet. Bryan took the assignment seriously. Faced initially with inadequately sized carrots, Bryan experimented with parsnips but at the last minute he was able to locate the perfect carrot. Take a look at the video: <https://www.facebook.com/video.php?v=10153066701502570>

In depth educational sessions were led by nationally known practitioners, scientists, and farmers including Jean Martin Fortier (Les Jardins de la Grelinette), Ellen Polishuk (Potomac Vegetable Farms), Guy Ames (Ames Orchard and Nursery), Rex Dufour (NCAT-ATTRA), and Matt LeRoux (Cornell University). Enhancing the sessions were local farmer speakers Lorrie Conway (Conway Family Farms), Christine Deck (Deck Family Farms), Randy Kiyokawa (Kiyokawa Orchards), Nick Gunn (Wandering Aengus Ciderworks), Jeff Bramlett (Pitchfork & Crow), and Elizabeth Miller (Minto Island Growers).

Thanks to our conference sponsors: Northwest Farm Credit Services, Western SARE, the Chambers-Eisgruber Fund, and the Oregon Farmers Market Association.

Our friends and partner organizations deserve a lot of credit too: Friends of Family Farmers, Oregon Tilth, Adelante Mujeres, Huerto de la Familia, and the National Center for Appropriate Technology (NCAT). 🌿



JM Fortier presents the Six-Figure Farm.  
Photo by Deanna Lloyd

*Many thanks to all the donors that so generously donated to the Center for Small Farms and Community Food Systems at the Oregon Small Farms Conference.*

*We appreciate your support!*

# Farmers Share Valuable Insights at Northwest Farmer to Farmer Conference

By: Maud Powell, Small Farms Program, Oregon State University & Andrew Rodman, Oregon Tilth

The annual Northwest Farmer to Farmer Conference is an opportunity for organic producers to convene at Breitenbush hot springs and share hard-won knowledge and experience about farming. Following are some highlights from the conference in note form.

## Aha's

During the "Aha" session, farmers shared revelations and innovations from the past season. These include:

- One farm adopted a flex crew for extra work. They placed an ad on a website and claimed that it was the best thing they ever did. All human drama was squashed, and the "city people" were great at doing physical labor. Many of them are desk-bound and really enjoy getting outside and working.
- Another farmer discussed the value of confronting and dealing with problems as they come up. While he found it challenging to have hard conversations, direct communication helped the farm in general.
- One farmer commented on her success with beneficial insects, including lacewings and ladybugs, and commented that they are just as efficient as broad-spectrum insecticide.
- Another farmer who had used a shovel hoe for many years switched to a colonial hoe. He found that he could work the top micro layer more than with the shovel hoe and also work closer to plants. The colonial hoe can be ordered in the Johnnys catalog.
- One farmer discovered wearing latex gloves under work gloves for warmth. Someone else suggested using nitrile gloves instead to avoid an allergic reaction.
- A farmer described his success in selling weeds at market. Chickweed and miner's lettuce are novel and nutritious offerings. He also sold mullein to herbalists.
- One farm put a bounty on gophers as an incentive to get the crew trapping gophers.
- Someone else found that remay kept thrips off of their onions.

- A farmer explained that using a CoolBot (walk-in cooler controller) in her tomato storage area kept fruit flies down and tomatoes storing longer.
- An older farmer cautioned the group to include quality of life in long-term decision making and encouraged others to take care of their bodies
- Another farmer keeps a note on her desk to remind herself to praise her staff regularly. She stressed the importance of giving positive affirmations to her workers.

## Crop Rotation

Some key points discussed at the session on Crop Rotation include:

- When dealing with the pathogen "club root", note that pH is a big factor. Lime to 6 or 7 will help suppress it.
- A successful rotation for one farm is Year 1: brassicas; Year 2: cucurbits/potatoes/onions/leeks; Year 3: Greens; Year 4: Cover crop (red clover/grass) or chickens, buckwheat or Sudan grass.
- Never plant strawberries where you had solanaceae (nightshades) the year before.
- Potatoes and winter squash intercrop well with vetch or Austrian peas.
- To avoid blight in potatoes, choose varieties, like a 65 day variety.
- Non-irrigated crops have less weed pressure with a shorter length of time to harvest.

## Labor and Crew Harmony Highlights

Deal with uncomfortable situations directly. Be blunt with people, even if this is not your personal style.

Farmers are generally not natural people managers. Don't take it personally when people are under stress. That's the nature of low-wage jobs. Be clear and firm with directions.

Perseverance is important.

Many younger farmers will want to leave to start their own operations. Be transparent about your farm's finances. Offer profit sharing.

Valuable insights on employee management can be accessed via [www.projects.nytimes.com/corner-office](http://www.projects.nytimes.com/corner-office) and [www.manager-tools.com](http://www.manager-tools.com).

Offer staff meeting times that are regular. Even a five minute check-in can be invaluable. Since not everyone has access to email to review notes, post paper copies in an accessible location.

Regarding farm worker cohesiveness: offer a time and place for crew events and gatherings. Be aware of cultural sensitivities. Building staff cohesion may be difficult across ethnic lines. Daily check ins can help. One farm reported that they offer half hour meetings on the clock. It pays off in the long run.

Some good resources to find workers are [www.goodfoodjobs.com](http://www.goodfoodjobs.com) for employees and [www.woof.net](http://www.woof.net) for interns. Working interviews are the most effective

### **Tips for Attracting workers**

Seek workers with demonstrated resiliency and positive attitude. One person can drag down the rest.

During the interview, ask if the applicant has played team sports or been in a musical band. These are indicators that they have the ability to get along with other/ Have they done physical activity that demonstrates endurance?

### **Dealing With Cultural Differences on the Farm** **Women**

Some women farmers report problems obtaining respect as people managers with all-male farm crews.

One woman suggested that during worker orientation, female managers should be shown respect and deference in front of entire crew.

### **Latino/Hispanic**

Recognize that many Latino are less assertive. This can be an obstacle in building crew cohesiveness. One farmer noted a difficulty getting Latino worker to enter

their house, even if they were bleeding. Regarding the language barrier, foster greater understanding to make sure that directions are clearly understood, and to avoid the perception that blame is being assigned. *✍*

## **Entrepreneurship & Innovation in Food Networks – Your Ideas Needed**

by Sally Duncan, Policy Analysis Laboratory (OPAL)  
Director, OSU School of Public Policy

Entrepreneurship has been a key driving force in developing and designing innovative food production and distribution systems at local and regional scales. The OSU School of Public Policy is part of a national project focused on learning more about how farmers decide to be involved in diversified revenue-seeking activities that move beyond conventional farming. A survey is provided at the link below. The project is funded by USDA and is a partnership between OSU, University of Vermont, City University of New York, University of Maryland, and Penn State University.

You are invited to take part in our survey, and your participation is completely voluntary and confidential. The results will be beneficial to new and existing farmers, service providers, rural entrepreneurs, and policy makers at the local, state and national levels. All of you share an interest in how your farming decisions affect long-term profitability and sustainability.

The survey should take less than 20 minutes for you to complete. Your answers will remain confidential. Survey results will be summarized to inform policy recommendations, research articles, and outreach reports for farmers. You will have an opportunity to participate in a follow-up interview, which would also greatly assist us in our research. Thank you very much!

**Take the survey at: [http://oregonstate.qualtrics.com/SE/?SID=SV\\_ehzbToplBErUDHf](http://oregonstate.qualtrics.com/SE/?SID=SV_ehzbToplBErUDHf)**



# Oregon Community Food System Network

By: Katrina Van Dis, Central Oregon Intergovernmental Council, and Sara Miller, Northeast Oregon Economic Development District

In February, representatives from over 35 organizations came together to explore and support the establishment of a statewide food system network that will enhance the ability of participating organizations to meet shared goals and leverage greater impact for food systems work across the state. Critical to the Network's success will be participation by organizations that represent diverse geographies, constituencies, and food issue areas, including those serving both local and regional food system development.


Interest in the formation of the Network developed among 14 organizations throughout Oregon that received Community Food System (CFS) funding from Meyer Memorial Trust (MMT) over the past four years. Their work focused on: increased public awareness and access to fresh, healthy local foods; increased capacity of organizations to respond to food system needs for farmers and consumers; leveraging additional resources; and improving regional networking. During the 4-year granting period, these organizations and invited stakeholders met face to face once a year to share successes, challenges, and opportunities to improve coordinated efforts.

In the spring of 2014, the organizations agreed to explore the development of a broader network that would continue beyond the MMT grant period. Teams were set up to acquire technical assistance and work toward identifying a statewide vision, membership criteria, structure and support.



Participants toast the new network.  
Photo by Wendy Siporen, THRIVE

This February, network stakeholders – including 21 additional organizations invited by the original group – reviewed vision, mission and goal statements and selected initial statewide focus areas including: Veggie Rx programs, SNAP match programs, wholesale market development, and access to land. Moving forward, a volunteer leadership team will provide cohesion for ongoing Network development and outreach.

Volunteers from participating organizations will work collectively to establish goals for the initiatives, leverage funds, and collaborate to further solidify the network to impact CFS outcomes, evaluation, messaging and state policies. For more information, contact: Matthew Buck, [matthewbuck.consulting@gmail.com](mailto:matthewbuck.consulting@gmail.com), 503-267-4667. 

Read the Oregon CFS Network's working definition of a community food system:  
[www.sarep.ucdavis.edu/sfs/def](http://www.sarep.ucdavis.edu/sfs/def)

# Tips and Good Cultural Practices for Producing Healthy Transplants in the Greenhouse

By: Heather Stoven, Small Farms Program, Oregon State University

For those who have access to a greenhouse, growing your own starts can give you a leg up on the growing season. However, growing in this environment often requires extra attentiveness and care due to this specialized setting. A few key best management practices as well as thoughtful preparation and planning can help lead to success.

Doing some research before you start regarding the particular requirements of your seeds can increase germination rates and help with space management and planning. Some things to consider are the temperature and light requirements for the seed to germinate as well as the length time before transplant. Bottom heat systems such as heat mats, hot water tubing systems and/or germination chambers can be a good way to achieve the needed germination temperatures.

Greenhouse air temperature regulation is also extremely important due to the short period of time before a greenhouse will heat up on a sunny day, or conversely cool down when the sun goes down. Side vents, fans, and shade cloth can provide assistance in cooling a house as day length and outside temperatures increase, however unless thermostat control systems are in place, it is important to be vigilant, since outside conditions can change quickly.

As starts are ready to transplant, hardening them off to acclimate them to the outside environment can help increase transplant success in the field. Gradually reducing watering and then placing the starts outside in a protected spot for three to six days before



Adult fungus gnat captured on a yellow sticky card.  
*Photo by Heather Stoven*

transplanting can help reduce plant stress and increase plant survival.

In addition to temperature regulation, the other most important aspect to greenhouse growing is proper water management. Irrigation systems can be set up to assist with keeping plants watered, but need to be well designed and monitored to ensure that the plants are not over or under watered based on the changing outside weather conditions. Hand watering of edges of flats is often warranted to ensure the entire flat isn't overwatered to compensate for a poor irrigation pattern or a few dry cells or pots. This can be time consuming, but pays in dividends when it comes to plant health. Plant stress from improper irrigation, especially over watering, can contribute to pest problems in the greenhouse as well as create a good environment for pathogens. Damping off of seedlings (wilted seedlings



often with a darkened lesion at the soil line) is caused by several fungi or water molds. Maintaining proper sanitation by using soilless mixes, sanitizing containers if reusing, properly irrigating and using bottom heat to encourage rapid germination will help to reduce this problem.




Photo by Heather Stoven

Fungus gnats are also very common in greenhouse environments and like damping off, become problematic in wet conditions. Proper irrigation and sanitation also go a long way in the prevention of this problem. The ¼ inch translucent larvae may not be readily apparent when looking at seedlings from above, but when present in the soil, they feed on tender roots of seedlings, stunting growth and providing a route of entry for pathogens. Monitor for the adults, which are 1/8 inch long and mosquito-like with yellow sticky cards placed at the soil line, or for the larvae with raw potato chunks placed on the media surface (they will congregate below the potato).

Biocontrol agents such as predatory mites, rove beetles or nematodes can be purchased and applied to effectively control fungus gnats.

Other insects and pathogens can often be avoided by sanitation techniques such as maintaining a clean floor free of

weeds and debris, keeping a weed-free barrier around the greenhouse, disinfecting benches between crops, not reusing potting media and keeping hose nozzles off the floor.

Practicing the above sanitation techniques and best management practices for greenhouses can be a challenge but should not be overlooked due to the sensitivity of seedlings. Using good practices when establishing plants in a greenhouse can help to produce stronger, healthier transplants which will help give the crop a good start and prevent larger problems down the road. 

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# Successfully Navigating the First Ten Years

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


**A**s all farmers know, learning to farm and growing a farm business can have steep learning curves. In those first few years, you not only have to learn how to grow things but how to sell them – and everything in between.

The OSU Small Farms Program has long provided education and training for small-scale, organic and sustainable farms and ranches, with specific programs that target the first “beginning” years. Over the years, we have seen first-hand that beginning farmer education is most effective when it meets farmers where they are developmentally on the road from start-up to mature farm business.

In December, we launched a project to develop new hands-on and classroom-based educational programs and demonstration projects that support the long-term environmental and financial viability of small-scale, organic and sustainable farms and ranches. The project, which is funded by the National Institute for Food and Agriculture, is part of our ongoing partnership with

Oregon Tilth. Since 2009, OSU and Tilth have worked together to advance organic and sustainable farming, with a focus on beginning farmer and rancher training. Our new project takes this work to a whole new level. Our shared goal is not simply to support the launch of new farms but to keep farmers farming, past the beginning years and into the future.

Over the next three years, we will build on our existing programs, adding advanced education focused on business management, small farm profitability, marketing, and sustainable farming methods. This education will be designed to match key developmental stages of farmers and farm businesses. We are identifying these stages by talking to farmers, learning directly from them about their own experiences and insights.

One exciting, innovative element of the project unfolding this spring is our Cost Study Cohort Pilot Project (see article Cracking the Cost Code). 

## Farm Direct, Value Added: Where to Start?

Value-added foods - jams and jellies, pickles and sauerkraut, syrups - can be a valuable and delicious way for farmers to increase their product offerings and extend the market season. They also meet growing consumer demand for local, farm-direct foods.

Making and selling value-added foods requires appropriate recipes and equipment, sound food safety practices, and knowing the legal requirements.

The OSU Small Farms Program has collaborated with OSU's Family and Community Health Program on a new guide, “Farm Direct, Value Added.” The short, easy to use guide provides information for Oregon farmers who want to make and sell products either (1) direct to consumers under Oregon's Farm Direct exemption or (2) to restaurants, retailers, distributors, and institutions, and/or sell products not allowed under that exemption.

The guide also lists a variety of classes and training opportunities - from OSU and others - for farmers interested in making and selling value-added foods.

**Download it here:** [http://smallfarms.oregonstate.edu/sites/default/files/small-farms-tech-report/osu\\_farmdirect\\_valueadded.pdf](http://smallfarms.oregonstate.edu/sites/default/files/small-farms-tech-report/osu_farmdirect_valueadded.pdf)



# Cracking the Cost Code

By: Lauren Gwin, Small Farms Program, Oregon State University & Tanya Murray, Oregon Tilth

**W**hat does it cost you to grow – and sell – carrots, lettuce, or strawberries? What can you grow and sell profitably, and what loses you money? Understanding what it costs to grow and market crops is critical to making informed decisions about what to grow, how to grow, how much to grow, what to charge, and where to sell.

Yet tracking cost data – especially for a highly diversified farm – can seem overwhelming and quickly takes a back seat to all the day-to-day work that needs to get done during the farming season.

To solve this problem, OSU Small Farms and Oregon Tilth have designed a Cost Study Pilot Project for the 2015 growing season. From March to October, teams of farmers in different regions of Oregon will collect data in the course of their normal farming activities, which they'll analyze in November.

Tanya Murray, the Organic Education Specialist with Oregon Tilth, designed and will lead the project. She has worked closely with OSU over the past year to evaluate and craft practical methods of gauging costs and farm profitability. She will provide direct support to farmers as they gather and analyze their data. She will also track how farmers experience the data collection process so she can modify and improve the system.

The time tracking approach Murray and the farmers will test is designed to integrate into normal farming practices and focuses on one on-farm activity area at a time. For example, the first area is the greenhouse: farmers will spend a few weeks tracking the time it takes to do various activities in the greenhouse related to growing transplants.

The activity areas, which will each get about 3 or 4 weeks, follow the typical progression of the growing season. After the greenhouse are: bed preparation, seeding and planting, watering, weeding and trellising, harvesting and post harvest handling, marketing, cover cropping and field clean up. Farmers will primarily

track labor – that is, the time it takes to do various activities related to a unit of space or a unit of crop (count or weight). They will keep a few additional records, largely those that most farmers already keep in some form.

The pilot project uses a cohort model – a group of farmers going through it together – so that participating farmers can learn from each other as they go. This is useful both in the data tracking process and in the analysis stage, when the farmers will look for ways to improve profitability. The cohort model also creates a sense of community and the opportunity for peer-to-peer accountability that can help maintain motivation through the duration of the farming season.

In November, Murray and the farmers will use their data to develop per-crop costs and compare them with current prices to evaluate the profitability of different crops. The groups will then brainstorm changes they could make to improve per-crop or overall profitability. For example, a farmer might discover that her biggest cost to grow and sell carrots is weeding. She could then evaluate whether a backpack flamer would be a worthwhile investment. Another farmers might reconsider the mix of crops included in a CSA share.

Having this kind of information about costs, Murray says, is critical for making informed decisions about your farm business.

In March and April, Murray is visiting all four teams of farmers – in the North Willamette, Central Oregon, Southern Oregon, and the North Coast – to lay the groundwork and get started. After that, she will provide instructions for each activity area through monthly webinars and also ongoing support through a listserv. Because the North Willamette region is her home base, Murray will work one-on-one with that team, and the other three teams will have local coordinators.

## **The View from Southern Oregon**

The Southern Oregon team, facilitated by OSU Small Farms agent Maud Powell and Thrive's Elise Higley, is

highly motivated to be part of the pilot project. Nine farms joined the cohort and attended an initial training on the project in March. Each farm in the cohort will record the production costs of growing onions in order to compare costs across farm operations. They have each chosen an additional two crops to track.

The project dovetails with an organized effort to increase the amount of local foods available in grocery stores in Southern Oregon as we reported in the last issue of OSFN. Thrive has been working closely with wholesale buyers, distributors and farmers to facilitate sales through a *Rogue Valley Grown* marketing label and an on-line purchasing platform. OSU Small Farms has teamed up with Thrive to offer educational programming for farmers on how to scale up and sell into wholesale markets.

Many of the producers in the cohort are interested in adding wholesale accounts, as direct markets for produce appear to be fairly saturated in Southern Oregon. Data recorded over the season will help determine break-even pricing for specific crops and whether wholesale markets – and wholesale prices – can be profitable. Additionally, tracking costs of production may help growers identify areas where efficiencies can be improved.

We will report on cost study cohort results in future issues of Oregon Small Farm News. *✂*

## *“Heat Beater” Beans Could Save the World’s Poor from Global Warming*



Beans—once feared to be a casualty of climate change—now have a bright future. New dry bean varieties that can withstand extreme temperatures have been developed through the Consultative Group for International Agricultural Research (CGIAR). This advance, accomplished through traditional breeding methods, will protect a staple food of the poor in developing countries. CGIAR bean breeders have developed 30 new types, or lines, of “heat-beater” beans that could keep production from declining across bean-dependent Latin America and Africa.

CGIAR researchers had previously warned that rising temperatures were likely to disrupt bean production in Nicaragua, Haiti, Brazil, and Honduras, while in Africa, those warnings had focused on Malawi and the Democratic Republic of the Congo as the most vulnerable, followed by Tanzania, Uganda, and Kenya.

Many of the new heat-tolerant beans developed by the CGIAR scientists are crosses between the common bean—pinto, white, black, and kidney beans—and the tepary bean, a hardy survivor cultivated since pre-Columbian times in an area that is now part of northern Mexico and the American southwest. Often called the “meat of the poor” for the affordable protein it provides, the crop is a vital foundation of food security for more than 400 million people in the developing world.

For more information and link to the full report, go to: <http://www.cgiar.org/consortium-news/beans-that-beat-the-heat/>



# Highlighting Farmers during Tasting Tables

By: Rachel Suits, Small Farms Program, Oregon State University

Tasting Tables in schools provide a great way for students to try new fruits, vegetables, and other foods. Students also get to learn how these foods are grown.

In February, the highlighted food of the month for Tasting Tables in Hood River and Wasco Counties was cabbage. Instead of simply serving raw, chopped cabbage, OSU Extension staff teamed up to make homemade sauerkraut. The cabbage was donated by a local farmer, Ronny Tannenbaum of Nature's Finest in Parkdale, OR, in exchange for a few jars of the kraut for himself.

Students were surprisingly excited to try the sauerkraut. Many students exclaimed that the kraut "tasted like pickles," while others discretely pursed their lips and described it as "sour!"

Some students even noted that the samples were "better than I anticipated it to be!" Many students had eaten sauerkraut in the past and encouraged their peers to try it.

Not only did students get to try a new, seasonal food, but students also had the unique opportunity of meeting the farmer who grew the cabbage. Ronny Tannenbaum was able to talk to students about the process of growing cabbage and reward students who tried the sauerkraut with a hand stamp. Through this experience, students were able to connect the dots between where and how food is grown, and how it makes its way into their cafeteria. This truly bridged



that gap between farm and cafeteria. Knowing where their food came from, and putting a face to the farmer who grew it, gave February's food taste that much more significance. This was a powerful experience for students; many had never met a farmer before and were in awe that they had the opportunity to meet "an *actual* farmer!" We look forward to having more food heroes like Ronny come to Tasting Tables in the future! 🌿

# Growing Quinoa in the Willamette Valley

By: Ian Dixon-McDonald, Marion-Polk Food Share & Neil Bell, OSU Extension Service

Quinoa (*Chenopodium quinoa*) is a broadleaved annual species belonging to the Amaranthaceae, the same family to which economically important crops such as spinach (*Spinacia oleracea*), beets, sugar beet and chard (*Beta vulgaris*) belong, in addition to prominent weeds such as pigweed (*Amaranthus* spp.). Quinoa is a native to a wide area of the western part of South America, ranging from northern Colombia, near the equator, to central Chile. This spans from 2°N to 40°S of latitude and within that range, quinoa can be found growing from near sea level to over 13,000 feet elevation.

Quinoa has been cultivated for approximately 8,000 years, becoming a staple food of indigenous peoples prior to the Spanish invasion of the region. It grows as a sturdy upright main stalk, which is topped with an often profusely branched inflorescence composed of tiny (0.15") flowers. The range over which it naturally occurs is an indication of the adaptability of quinoa: it can grow where rainfall is as little as 3" per year or as much as 75" per year. It will grow in marginal soils, tolerating pH ranging from 4.8 to 9.5, as well as being uncommonly tolerant of soil salinity. It has also shown a tolerance for hard frosts during both vegetative growth and flowering.

Besides the ability to grow under conditions that would be problematic for other crops, quinoa is also a very nutritious food. The rounded seeds have a natural balance between oils, protein and carbohydrates. The protein content ranges as high as 16% and this is a very complete protein that contains all the essential amino acids. Because of its high starch content, quinoa can be prepared for flour production in the same way as cereals. Compared to grains such as couscous (ground hard wheat), white rice, and barley, quinoa provides similar levels of dietary fibers and superior levels of vitamins and minerals as well as natural anti-oxidants. However, unlike wheat, barley, or rye, quinoa does not contain gluten.

Despite all of these advantages, quinoa has remained a minor crop worldwide. The Food and Agriculture Organization of the United Nations (FAO) estimated that in 2011 quinoa was grown on about 250,000 acres worldwide. Much of this is in South America, primarily Bolivia and Peru (which produce 80% of the world crop), but also in China, Europe, Africa and India. In North America, efforts to develop strains of quinoa adapted to cultivation began in Colorado and Nevada in the 1980's. As of 2009, the U.S. produced approximately 6% of the world supply. More recently, the USDA National Institute of Food and Agriculture



Planting equipment, April 15th.



Symptoms of downy mildew, May 29th.





Inflorescence development, June 23rd .



Basal downy mildew symptoms, June 30th.

awarded Washington State University, Brigham Young University, Utah State University and Oregon State University a 4-year grant in 2012 to study cultivar development and agroecology techniques for organic production. The OSU effort is overseen by Stephen Machado at the Columbia Basin Agricultural Research Station in Pendleton.

Interest in the crop has also led to small scale production in western Oregon. Marion-Polk Food Share (MPFS) the regional food bank serving Marion and Polk counties, is entering into its third season of quinoa production in the Willamette Valley. MPFS starting growing quinoa to provide a local supply for their “Better Burger,” a veggie burger developed and produced by MPFS. Protein-rich foods are hard to come by in food banks, and this product serves as a protein-rich, healthy supplement. MPFS leases and operates a 200 acre farm near Salem, owned by the Oregon Department of Corrections. For quinoa production, they contract with Iverson Family Farms to conduct field work. In 2012, MPFS started small garden-plot trials with quinoa. In June 2013, they planted 5 acres in an array of locations, with and without irrigation. Although the crop grew well, it was damaged by heavy rain just as it was ready for harvest.

For 2014, MPFS went to a larger scale and planted 9 acres of quinoa. The planting location was immediately south of Mill Creek Correctional facility on Turner

Road south of Salem. The soil type in this field is predominantly Salem gravelly silt loam. Seed was purchased from Wild Garden Seed, a small seed company in Philomath, OR. Owner Frank Morton has been growing quinoa for over 30 years in the Pacific Northwest and has developed unique strains of the crop. Four of these seed strains were purchased: ‘Cherry Vanilla’, ‘Red Head’, ‘Brightest Brilliant Rainbow’ and ‘Oro d’ Valle’. Seed was planted on April 15<sup>th</sup> utilizing a John Deere 450 grain drill. All cultivars were seeded at approximately 7 lbs/acre and cut approximately 1:2 with Metarex® slug bait (Ag Nova Technologies).

Quinoa germinates readily, and even within the first week after planting on April 15<sup>th</sup>, seedlings could be observed. By the end of the first week of May, seedling emergence was evident throughout the planting. By the end of May, plants in general were 4-12” tall. Rapid growth ensued throughout June. Inflorescence development became apparent by the third week of June and the maximum height of the crop was reached near the end of the month. On June 13<sup>th</sup>, the planting received an overhead application of 15 gal of 20-0-0 and 1 gal of Structure®, (Actagro®, LLC) which is 7-21-0. Average height was 46” by July 18<sup>th</sup>. Although observations in 2013 indicated that irrigation typically increases plant size and yield, in 2014 this crop received no supplemental irrigation. Conditions from June through the end of August featured above



normal temperatures and abnormally dry conditions. Fortunately, as the soil appeared to be drying out, timely rains provided adequate rainfall to water the crop. If dry spells had lasted longer, irrigation would have been applied.

Weed emergence began simultaneously with the quinoa, as herbicides were not applied to the field. A number of different weeds were common in the planting, the most important of which as a competitor for the developing crop was Mayweed Chamomile (*Anthemis cotula*), which developed into dense stands up to 2' tall, particularly in the northwestern corner of the planting, and evidently suppressed growth of the quinoa in that area. Other weeds were either too diminutive or sporadic in occurrence to have a similar effect. Other weed species present included Queen Anne's Lace (*Daucus carota*), Shepherd's Purse (*Capsella bursa-pastoris*), Smartweed (*Polygonum* sp.), Spiny Sow Thistle (*Sonchus asper*) and Field Bindweed (*Convolvulus arvensis*).

The largest problem with this crop became evident in mid-May, when yellow and pink blotches developed on foliage throughout the planting. Samples of the affected foliage were sent to the OSU Plant Clinic for diagnosis. The spots turned out to be a symptom of downy mildew, caused by *Peronospora* sp. The species *P. variabilis* has been identified from Pennsylvania in 2012 as a cause of downy mildew on quinoa and worldwide seems to be the most serious disease problem, resulting, in some cases, in total crop loss. The spots continued to appear on foliage throughout

May and into June, but as the weather became warmer and remained dry, incidence of infection decreased. As the plants continued to grow, the newer foliage did not exhibit signs of infection.

The developing crop was sampled for insects on June 30<sup>th</sup> and July 18<sup>th</sup>. The principal insect species present on June 30<sup>th</sup> was Western Spotted Cucumber Beetle (*Diabrotica undecimpunctata* ssp. *undecimpunctata*), which was present in considerable numbers (i.e. 20-50 adults per sweep set). Also present were thrips and some aphids (species not identified). Monitoring on July 18<sup>th</sup> detected similar numbers of Cucumber Beetles as well as significant numbers of nymphal seed bugs. Insect populations in general appeared to decline following this and by harvest there were no noticeable insect pest issues. This was a welcome development as *Lygus* bugs can cause yield loss by feeding on developing seeds late in the season.

The entire planting was harvested by combine on August 27<sup>th</sup>. Crop weight directly off the field was 8,464 lbs. MPFS used a 9600 combine with a John Deere 222 header. Clover bars were used in the



Crop color development and testing for seed development, August 4th.



combine. Processing quinoa involves multiple stages, including drying (if harvested damp), cleaning and some combination of scarifying/de-hulling, polishing or rinsing. The last two steps are to remove the bitter saponin coating on the seed. Seed cleaning was done by a local seed processor, K/S Seeds, located in Silverton, Oregon. This process reduced the seed weight by almost half. Polishing was done by Willamette Valley Quinoa, a new, small business in the Salem-Keizer area. At the end of processing, MPFS yielded over 4,000 lbs. of quinoa in 2014, and will be using that product in burgers this year.



Harvest, Aug 27th.

For 2015, 20 acres are planned. Aside from growing quinoa for internal use, the project itself has sparked much interest in the broader agricultural community. Farmers, processors and distributors have all expressed interest in the potential of a quinoa cash crop in the Willamette Valley. *✍*



# OSU

Oregon State UNIVERSITY

## Small Farms Program

### A small group of extension faculty who are changing the world

#### Our Vision

- Successful small farms
- Organic and sustainable farming systems
- Healthy and resilient community food systems
- Strong local food economies

#### What We Do

- Beginning Farmer & Rancher education
- Women's Farming Networks
- Organic Farming Research
- Small Scale Production Systems
- Small Scale Meat Processing
- Organic Fertilizer & Cover Crop Calculator
- Local & Regional Markets
- Oregon Small Farm News
- Annual Small Farms Conference

**[smallfarms.oregonstate.edu](http://smallfarms.oregonstate.edu)**

*The OSU Small Farms Program is supported by the OSU Center for Small Farms & Community Food Systems. Learn more at [centerforsmallfarms.oregonstate.edu](http://centerforsmallfarms.oregonstate.edu)*

# Economics of Local Food: Strategies and Impact

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

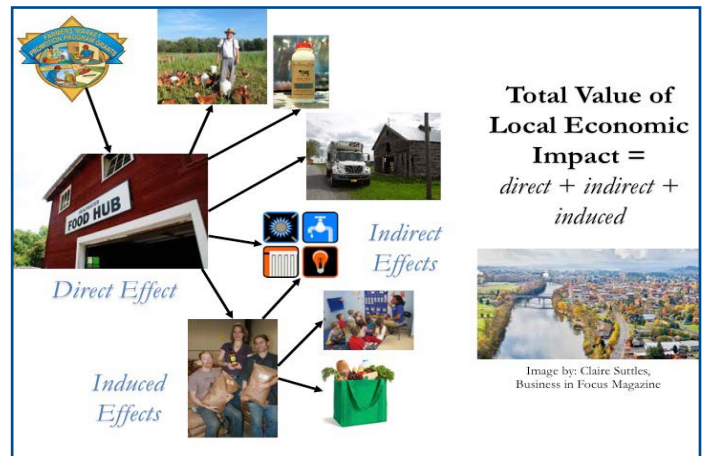
On February 27, the day before the OSU Small Farms Conference, the Center for Small Farms & Community Food Systems offered an afternoon workshop, “The Economics of Local Food: Strategies and Impact,” featuring two nationally-known speakers.

The workshop was integrated with a statewide gathering of community food system organizations and was designed to provide leaders of those organizations with research-based information, tools, and training they can use in their own work. The workshop was supported by the Chambers-Eisgruber Fund for Sustainable Agricultural Production and Marketing.

First, Diana Abellera of the Community Alliance with Family Farmers, based in California, described what CAFF has learned after many years’ experience in local food distribution. Multiple attempts at cracking the distribution code without achieving economic sustainability have led CAFF to its current “value chain facilitation” approach. Abellera described what this means and why it works.

Next, Becca Jablonski, a researcher at Colorado State University, described best practices for accurately estimating the economic impacts of local food systems, offering examples from her own research. She explained the importance of measuring net rather than gross impacts; all policies/initiatives involve trade offs that should be considered in these assessments. Jablonski most recently worked with USDA’s Agricultural Marketing Service to design a series of toolkits for such impact studies, including guidance for communities and universities to do studies together.

The Center for Small Farms & Community Food Systems is partnering with OSU Applied Economics faculty Mallory Rahe and Larry Lev to launch a study of the economic impact of local food in Oregon, using the IMPLAN-based methods Jablonski described. We will collaborate with local organizations to help collect the significant amount of primary data required.



A slide from Becca Jablonski’s presentation

Workshop presentation slides are now posted on the [Center home page](#) — see the box in the lower right hand corner

## Other useful resources:

- CAFF’s report, [Making the Invisible Visible: Looking Back at 15 Years of Local Food Systems Distribution Solutions](#)
- Schmitt, Jablonski, and Kay. 2014. [A Practitioner’s Guide to Conducting an Economic Impact Assessment of Regional Food Hubs using IMPLAN](#). USDA Agricultural Marketing Service. 
- Low et al. 2015. [Trends in U.S. Local and Regional Food Systems: A Report to Congress](#). USDA Economic Research Service.
- Low and Vogel. 2011. [Direct and Intermediated Marketing of Local Foods in the United States](#). USDA Economic Research Service.
- National Good Food Network webinar. 2015. [Talk is Cheap... and Efficient! Facilitating value chain development without costly new infrastructure](#).
- [Farm to Table Co-Packers](#) (mentioned as a successful model) 





# Closing the Hunger Gap

September 13 – 16, 2015

Portland, OR

The 2015 Closing the Hunger Gap: Cultivating Food Justice Conference, hosted by the Closing the Hunger Gap network and Oregon Food Bank, will bring together food banks, anti-hunger advocates and food justice activists from across North America. More than 500 attendees will be in Portland, Oregon from September 13-16 to network, learn about community food systems strategies and create a collective vision. If you believe food banks should expand their efforts beyond food handouts and toward collaborative, community-based empowerment initiatives, this event is for you!

The conference aims to incorporate a broad range of topics including health and nutrition, food hubs, community organizing and strengthening connections between local farms and emergency food providers. Presenters and attendees will represent food banks, farms, and nonprofit organizations focused on health, education and food justice. In addition we will hear from emerging leaders and people most impacted by hunger.

The conference features:

- A key note presentation by Nick Saul from Community Food Centres Canada.
- Field trips around the region focusing on labor in the food system, empowerment through food, child nutrition, community economic development and the Columbia River Gorge food system.
- 35 workshops on topics such as community economic development, how to fund community food system projects and food justice.
- A fantastic reception featuring food from participants of a multi-cultural food business incubator program, live music and time to connect with other conference attendees.
- An intensive, day-long course on Food Policy Councils.
- An open space session where every participant has the opportunity to convene a discussion about what interests them most.

Registration opens June 1. Scholarship applications will be available mid-May. Learn more about the conference at [thehungergap.org](http://thehungergap.org).

## CULTIVATING FOOD JUSTICE CONFERENCE

# Calendar



## April

### **30 - Farmer to Farmer Networking: Talking Cover Crops**

We'll discuss which cover crops grow well in the Willamette Valley for building biomass and sequestering carbon. Other topics include cover crop varieties, seeding rates, rotation strategy, termination methods, pest and disease issues, cost efficiency, and time commitment. We'll walk fields and have the opportunity to climb into a soil pit to see the positive effects of years of building soil health. Linn County, OR. 3:00 PM - 6:00 PM. RSVP at 541-766-3556. **Free**

## May

### **9- Agriculture Pesticide Pick-up for Coos, Curry, and Douglas County**

This one-time event offers agricultural, commercial, and industrial operators in Coos, Curry, and Douglas Counties the opportunity to clean out their pesticide storage sheds and dispose of old or unwanted pesticides. Participants must pre-register with Clean Harbors by April 25. Information collected during registration will be used for planning and scheduling pickup times; it will not be used for regulatory reporting. Empty, triple-rinsed pesticide containers will also be accepted (no registration necessary for clean containers). Beaver Hill Disposal Site, HWY 101 near Coos Bay. 8:00 AM - 2:00 PM. Registration

information can be found at [http://extension.oregonstate.edu/coos/sites/default/files/agriculture/documents/may\\_9\\_pesticide\\_collection\\_flyer.pdf](http://extension.oregonstate.edu/coos/sites/default/files/agriculture/documents/may_9_pesticide_collection_flyer.pdf). For technical questions, contact Graham Gadzia of Clean Harbors at (253) 639-4240 ext 2813 or Gadzia.graham@cleanharbors.com **FREE**

### **12 - Linn-Benton Livestock & Forages Breakfast Educational Program**

Topic TBA. Pioneer Villa Restaurant, 33180 Highway 228. Halsey, OR. 6:30 AM - 8:00 AM. For more information contact Shelby at 541-672-4461 or shelby.filley@oregonstate.edu. **Free**

### **13 - Lane County Livestock Association Breakfast Educational Program**

The Cottage House Restaurant, 1875 Mohawk Blvd, Springfield, OR. 6:30 AM - 8:00 AM. For more information contact Shelby at 541-672-4461 or shelby.filley@oregonstate.edu. **Free**

**<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