

# Oregon Small Farm News

Oregon State University Small Farms Program

Spring 2016

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Basil

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# The OSU Small Farms Conference: 16 Years & Breaking Records

By: Garry Stephenson, Coordinator, OSU Small Farms Program

**T**he Oregon State University Small Farms Conference is the big event of the year for the OSU Small Farms Program. Our goal is to have a day when small farmers and ranchers, food and farming non-profit organizations and agencies, and the businesses who support farmers are in the same place at the same time. This year broke another attendance record with nearly 1000 people attending. Yikes!

Each year we send a post-conference evaluation to attendees. A few tidbits from this year's survey reveal: 72% of attendees were farmers with the balance made up of farmers market managers, food and farming non-profit organizations, government and university staff, and students. Everyone went home happy rating the conference 3.6 on a 4 point scale; actually the *Think with a Drink* post-conference reception may have helped.

## Attendee Top Seven Favorite Parts of the Conference

1. Learning something new [90%]
2. The low cost [87%]
3. The lunch sourced from local farms [84%]
4. The 30 educational sessions [84%]
5. Networking with farmers [76%]
6. Visiting the vendors [63%]
7. Networking with non-profit staff, farmers market managers, government and university staff [62%]

We hear from attendees that it is hard to choose between sessions. To help, we have posted a number of handouts and videos from the conference sessions on the Small Farms website. Find it here: <http://smallfarms.oregonstate.edu/sfc/conferenceproceedings>

Comments from our attendees:

*"We look forward to the conference every year! It is very inspiring and we always learn something new."*

*"Because of a connection made at the conference, I now have the land to begin my farm."*



*“Great sessions this year that were very applicable to me. I really enjoyed the information about food safety, GAP, and how to effectively price your products. The gentleman from the Purple Pitchfork was outstanding at giving us tangible information.”*


*“I have attended this conference for 3 years. Each year was great, but this year’s conference was the BEST ever. I learned many new things. Thank you so much.”*

Although the conference was a single day on Saturday, events surrounding the conference began on Thursday with the two day convergence the *Oregon Community Food System Network*, and continued Friday with a meeting of the *Oregon Agritourism Network* and the *Annual Meeting of the Oregon Farmers Market Association*, the conference was followed by the *Friends of Family Farmer After Party* on Saturday evening, and finally the *Annual Pacific Northwest Flower Farmer Meet Up* on Sunday. This is an impressive lineup representing a lot of influence in farming and our food system.



The low cost of the conference is based on the generosity of our financial sponsors. A big thank you to Northwest Farm Credit Services, Western SARE, Recology, Bejo Seed, and Carts and Tools.



What to expect for the 2017 conference? The usual nationally known speakers, a great locally sourced lunch, great vendors, and wonderful people to hang out with but likely a cap on registration to keep the conference a manageable size. Also returning will be “Never Throw in the Towel” Powell, “Declare it don’t despair it or you will repair it” Garrett, and the rest of the Small Farms gang. Watch for registration to open in December 2016. 

From top to bottom: The crowd. The sessions. The Food.  
Photos by Deanna Lloyd

# USFDA issues RFC in FR re BSAAO for FSMA PR

By: Lauren Gwin, Center for Small Farms & Community Food Systems, Oregon State University

**H**ere's the translation:

The U.S. Food and Drug Administration has issued a Request for Comments in the Federal Register regarding Biological Soil Amendments of Animal Origin, for the Food Safety Modernization Act Produce Rule.

That is, manure. And in this case, untreated manure as it is used in the growing of produce that will be consumed raw.


Unless you have been hiding under a rock with your fingers in your ears for the last few years, you know that one of the big controversies in the first draft of the FSMA Produce Rule was that FDA was going to require a 9-month application-to-harvest interval for untreated BSAAO. This was far longer than the National Organic Program requirement of a 3 to 4 month interval (depending on the risk of soil contact), and had no clear scientific justification.

After hearing the arguments and the evidence, FDA eventually agreed about the lack of scientific data and decided not to pursue a 9-month application-to-harvest interval for untreated manure. Instead, the Agency said, it would leave a blank space in the final rule for an appropriate length interval, which it would determine through a comprehensive risk assessment.

The time for that risk assessment has arrived. On March 4, FDA published a Request for Comment in the Federal Register asking for “scientific data, information, and comments” to kick off what will be a multi-year process. This first step is for FDA to gather all available scientific research, including information regarding current on-farm practices.

There will be future opportunities to comment on the risk assessment itself as well as the proposed rule when it comes along.

Comments on this phase are due May 3. In the run-up to that, the National Sustainable Agriculture Coalition is leading an effort to gather all relevant scientific research as well as survey farmers about practices. We will keep you in that loop to make sure that the interests of Oregon's organic and sustainable farmers are heard during this public process.

**To read the whole thing (it's not actually that long) and get instructions on how to submit comments, go here:** <https://www.federalregister.gov/articles/2016/03/04/2016-04712/risk-assessment-of-foodborne-illness-associated-with-pathogens-from-produce-grown-in-fields-amended> 

## Request for Comments – Summary

The Food and Drug Administration (FDA) is requesting scientific data, information, and comments that would assist the Agency in its plan to develop a risk assessment for produce grown in fields or other growing areas amended with untreated biological soil amendments of animal origin (including raw manure). The risk assessment will evaluate and, if feasible, quantify the risk of human illness associated with consumption of produce grown in fields or other growing areas amended with untreated biological soil amendments of animal origin that are potentially contaminated with enteric pathogens, such as *Escherichia coli* O157:H7 or *Salmonella*. The risk assessment also will evaluate the impact of certain interventions, such as use of a time interval between application of the soil amendment and crop harvest, on the predicted risk. The risk assessment is intended to inform policy decisions with regard to produce safety.

# Farmers Share Their Farm to School Experiences

By: Megan Kemple, Oregon Lead, Natl. Farm to School Network

A workshop titled Farm to School: Opportunities, Updates and Input was offered at the Small Farms Conference in February. Presenters included Amy Gilroy, Farm to School Program Manager, Oregon Department of Agriculture; Megan Kemple, Oregon State Lead, National Farm to School Network; Mike Hessel, Red Hat Melons; and Paul Harcombe, Harcombe Farms.

The session provided an overview of farm to school opportunities including selling to schools and educational partnerships. The Oregon State Legislature recently allocated \$4.5 million to Oregon schools to purchase Oregon-grown and processed products and to provide funding for farm to school education. Oregon's program is the highest funded program in the country and nearly matches the USDA's national Farm to School program (\$5 million). As a result, Oregon public schools now have a significant amount of funding to purchase Oregon products.

Presenters covered information on selling to schools most of which is summarized in this handout titled *"Selling to Schools: Tips for Oregon Farmers."* Producers, Mike Hessel and Paul Harcombe, shared their own successes selling to schools and how producers can get started developing relationships with schools.

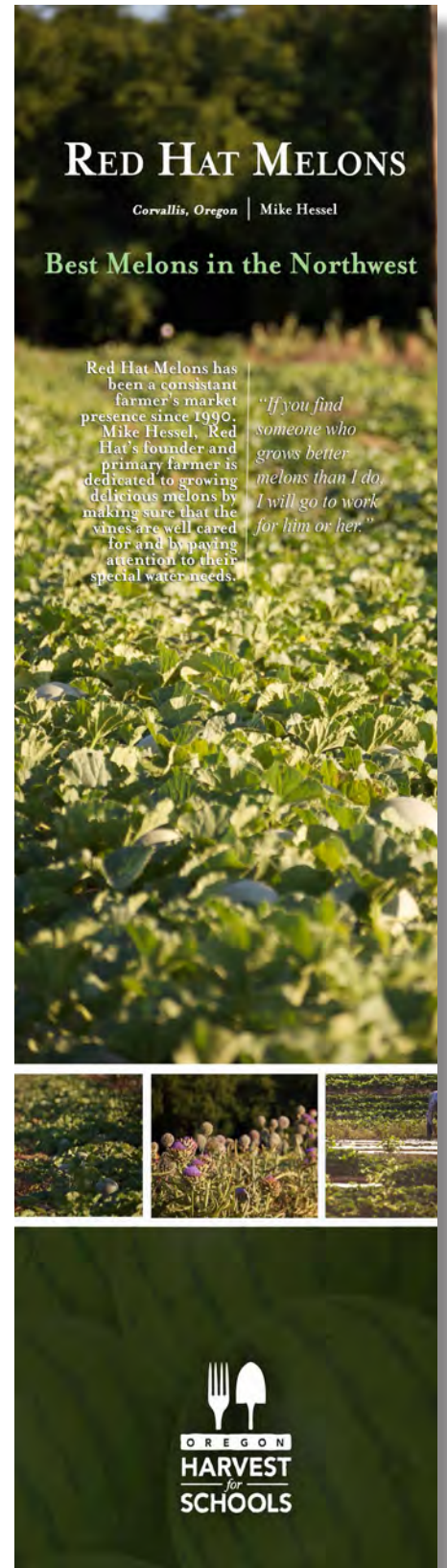
Mike Hessel owner of Red Hat Melons, has been selling melons to school districts in the Willamette Valley for years. Melons are a good match for schools because kids love them and they are relatively easy for school kitchen staff to process. He delivers his product directly to schools, which appreciate the personal relationship. His farm is highlighted on the Oregon Harvest for Schools poster (see photo).

Paul Harcombe, owner of Harcombe Farm, sells his winter squash to the Corvallis School District. Winter squash requires a lot more processing than other crops and so can be challenging for school kitchen staff to deal with. To address this challenge, Corvallis Environmental Center has provided staff and volunteers to help with processing in the kitchen,

and Paul helps out as well. Paul and the CEC volunteers process the squash and save the seeds, which Paul sells and which are important part of his farm business. A win win relationship!

Presenters also shared tips on hosting farm field trips, promote farmers products in the school cafeteria and how producers can become better engaged with students in the classroom.

If you're interested in engaging with schools and would like support, contact Megan Kemple, Oregon State Lead National Farm to School Network or Amy Gilroy, Farm to School Program Manager, Oregon Department of Agriculture. 



# Growing Resilience: Water Management Workshop Series

By: Amy Garrett, Small Farms Program, Oregon State University

Our water supply in the Pacific Northwest is becoming increasingly affected by climate change through reduced snowmelt, higher temperatures and drought ([Climate Risks in the Northwest](#)). Many Oregon farmers using surface water for irrigation were cut off early during the 2015 growing season. Furthermore, many new farmers have trouble finding land with unrestricted irrigation rights. Looking ahead, up to a 50% reduction in summer water availability is predicted in Oregon within 50 years. In response, the *2016 Growing Resilience: Water Management Workshop Series* (funded by an Oregon [SARE](#) Mini-Grant) was designed to increase our knowledge and awareness of drought mitigation tools, strategies for navigating water law and restrictions, and techniques for growing with little or no irrigation. Several sessions have been offered so far:

- **Growing without Irrigation:** Interested in learning more about how to grow fruits and vegetables with little or no water in the Pacific Northwest? This session covers site selection, dry farming tools and techniques for orchard and row crops, soil hydrological principals, and the power of seed saving in dry farmed systems.
- **Innovative Approaches to Catching and Storing Water:** Are you navigating limited water supply on your farm? Learn from multiple case studies and examples about innovative approaches to catching and storing water on your farm.
- **Navigating Oregon Water Law and Restrictions in Northwest Oregon** with Mike McCord, Joel Plahn, and Harmony Burright of the Oregon Water Resources Department covers:
  - Water master duties and responsibilities in the NW Region
  - How and why regulation of water rights occur
  - 2015 Regulation specifically Mary's


River and Luckiamute River

- Obtaining new water to build a pond, use BOR water or use groundwater. Alternatives like Transferring water rights
- Significant Points of Diversion, Meter Requirements
- Groundwater limited areas
- New Water Resources Development Program

Weren't able to attend in person? No worries! These sessions have been video-recorded and posted on our website (<http://smallfarms.oregonstate.edu/wmws>).

The next scheduled session for the *2016 Growing Resilience: Water Management Workshop Series* will be, '**Water, Soil and Carbon for Every Farm with Keyline Design: Learning from the world's driest inhabited continent and it's drought solutions**', with Australian Permaculture Consultant, Darren Doherty ([Regrarians Ltd.](#)) - coming up on June 2<sup>nd</sup>!

In addition, the *Dry Farming Collaborative* participatory research project is initiating this spring!

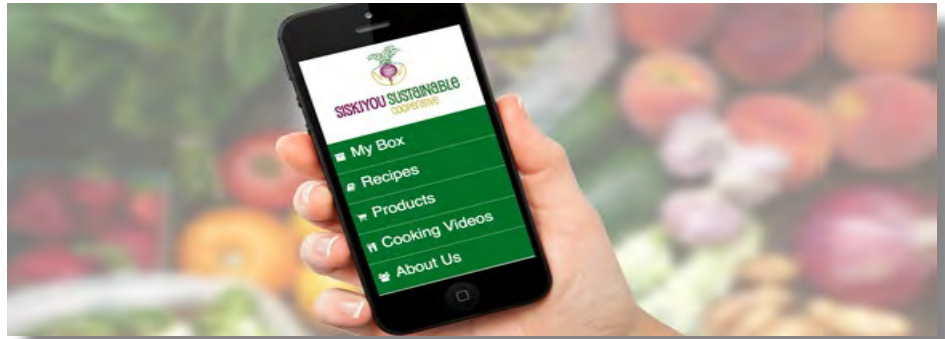
This is a group of farmers, extension educators, and agricultural professionals partnering to increase knowledge and awareness of dry farming management practices with a hands-on participatory approach. Nine sites throughout Western Oregon so far are planning to host a dry farming trial. Dry Farming Field Days will be held at several of these sites in August. For more information and project updates throughout the growing season visit: <http://smallfarms.oregonstate.edu/dry-farming-demonstration> or the *Dry Farming Collaborative* Facebook page. 



# New Technology Available for CSA Farmers Funded by Western SARE

The [Siskiyou Sustainable Cooperative CSA](#) of

Jacksonville, OR recently unveiled new technology available at no cost to CSA farmers looking to connect with their members. This innovative, open source software is the first of its kind and was developed through funds acquired from SARE (Sustainable Agriculture Research and Education).



At a time when farmers work hard to keep up with some of the latest trends in the local food movement nationally, Siskiyou Sustainable Coop CSA coordinator Maud Powell sought to provide a high-tech, user friendly tool to support CSA members interested in having their member information right at their fingertips. “CSAs continue to be a great marketing channel for farmers, but in order to attract customers, they need to be adaptive to cultural trends,” says Maud.

The CSA App was developed by [Josh Shupak](#) with assistance from Lars Faye of [Chee Studio](#) and Becky Brown of [iWrite](#). Siskiyou Sustainable Cooperative CSA members participated in surveys and focus groups to determine the features and functionality that would be used in the App. The CSA App supports CSA members in having easy access to product information, recipes, cooking and storage tips and nutritional information for the produce found in their weekly CSA shares.

The mobile friendly App was created using a web based platform and is easily customizable by anyone comfortable using a computer and navigating the internet. “The whole idea is to keep it simple for the farmer and easy to use for the membership,” says Powell. “I wanted to help make CSAs more relevant and accessible for younger generations, and the most obvious way to do that is through the use of technology.”

Farmers can utilize the templates in the web platform to create their very own personalized App that includes

product information and photos, recipes, cooking videos, farmer bios and any specific instructions about how and where to pick up weekly CSA box deliveries. Creative users may even find additional ways to provide valuable information to their members using this mobile technology.

Siskiyou Sustainable Cooperative CSA member Heidi Dawn finds the new App useful. “Like a lot of people these days, my smartphone has become an important organizational tool for my busy life. Having access to recipes and cooking videos that feature the same vegetables that I am picking up each week throughout the season makes my life a lot simpler.”

CSA members tend to cook and shop around what comes in their weekly box of produce. “I’m much more likely to eat what’s in my CSA share if I can find quick and easy ways to prepare meals that my whole family will enjoy. The new CSA App helps me do that,” reports Dawn.

Access to the customizable web platform is provided free of charge, although a valid credit card is required to secure information in the account set up phase. All content (product information, photos, recipes and more) was developed by the Siskiyou Sustainable Coop and is open source and available for use, although individual customization may be necessary to reflect the specifics of a particular CSA farm.

For more information and instructions on how to get started, please visit: <http://www.siskiyoucoop.com/>. 

# National Animal Health Monitoring System and the 5 Q's

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

Once upon a time there was a USDA agency called APHIS (the Animal and Plant Health Inspection Service). Every year, APHIS sent a decree out to all the land using NAHMS (the National Animal Health Monitoring System). The decree pertained to animal health and each year's decree focused on a different type of livestock. "In 2014, we will focus on Dairy Cattle!" proclaimed APHIS. Thus, the 2014 NAHMS Dairy Study commenced.

## Differences between Large and Small Farms

There is much to be gleaned from the findings of the 2014 NAHMS Dairy Study and its offshoot, the 2014-15 Dairy Calf Study. This article will highlight data related to calf care. Many of the conclusions that can be drawn pertain to all sizes and types of dairies. In general, larger farms (> 500 head) did a better job meeting recommended goals pertaining to calf care, feeding, and management. This is because the larger a dairy gets, the more likely it is the farmer's only job and source of income—there is no off-farm job to take them away from the cows. Larger farms have a bigger labor force with trained employees, too. Also, being professionals, large dairy operators usually have and pursue continuing education about dairying. Owners of very small dairies (<30 head) may have off-farm jobs that interfere with frequent observations of animals and few or no employees to help.

Some important issues were highlighted by this study—ways we are falling short of implementing research-based Best Management Practices (BMPs) and not achieving optimal calf health, growth, and welfare outcomes. These BMPs are applicable to even the smallest dairies. Calf BMPs are critical to getting the next generation of dairy cattle off to a good start on a long and healthy productive life. Because the NAHMS data revealed we could be doing a better job with colostrum quality, management, and feeding—and colostrum is critical to calf health—this article will focus on colostrum.

## Colostrum = Liquid Gold

Colostrum is the first milk produced by a lactating mammal at the start of a new lactation. It is much higher in fat and vitamins than normal milk. It also contains antibodies, which neonates can absorb intact to receive immediate protection from disease. Farm animals need sufficient quantity of high-quality colostrum as soon as possible after birth to provide much-needed calories and passive immunity to disease-causing agents.

## Quality

Dr. Sandra Gooden, University of Minnesota calf expert, refers to the "5Qs" of colostrum: quality, quantity, quickness, cleanliness, and quantification. We'll start with quality. The BMP recommendation is to give 150 to 200 grams of immunoglobulin type G (IgG) of colostrum or colostrum replacer per newborn calf. How do you know how much IgG you are giving? First, you have to measure the IgG concentration of the colostrum—this is the measure of quality. High-quality colostrum has at least 50 grams of IgG per liter. Measurement tools include colostrometers (watch a short video at <https://www.youtube.com/watch?v=hGvk9KFTBCE>) and Brix refractometers (<https://www.youtube.com/watch?v=FIPModu8uzY>). High-quality colostrum has a Brix refractometer value >22% or a colostrometer reading in the green zone.

A Brix refractometer is not very expensive, but a veterinarian should be consulted before purchasing one. Select a model with automatic temperature compensation. This tool can also be used to ensure milk replacer or whole milk feedings have the recommended concentration of 12.5% solids, which is 10 to 12% on the Brix scale.

Note that high-quality colostrum cannot be measured by an unaided human eye; "just looking" is of no use. Also, do not make assumptions that older cows produce higher-quality colostrum than heifers—the NAHMS study data refuted that common belief. Along

similar lines, just because an individual produced high-quality colostrum one year does not mean she will in subsequent years; many variables come into play every year.

What do you do if colostrum quality is too low? You can supplement the IgG content by adding colostrum replacer or supplement powder until the proper concentration is reached. Lower-quality colostrum can also be fed to two- or three-day-old calves that have already received high-quality colostrum on Day One. A cow's very first colostrum in a new lactation is the most concentrated in IgG because when milk production starts, it dilutes colostrum.

Figure 1 below depicts data from the NAHMS study and shows that 77% of calves are receiving high-quality colostrum, but 23% are not, leaving them at increased risk of disease. Unfortunately, only 53% of farms use *any* type of method to determine colostrum quality and only 15% use *accurate* methods (colostrometer or Brix refractometer). We can and should do better than this.

### Quantity

Q #2 pertains to HOW MUCH. The goal (BMP) is to feed 10% of a calf's weight in high-quality colostrum to each calf within four hours of birth and repeat this feeding so each calf receives a total of 20% of body weight of colostrum in its first 24 hours. For many calves, this amounts to one gallon of colostrum fed ASAP and repeated 12 hours later.

Milk feeding rates are similar: 20% of the calf's body weight in milk or milk replacer per day, divided into two to four meals. Learn how to measure calf weights accurately to avoid over- or under-feeding.

The NAHMS data tells us we could be doing better in this regard: the amount of colostrum fed at first feeding averaged 3.1 quarts and the total fed in 24 hours averaged 4.7 quarts; we need to increase these amounts to the BMP recommendations for optimal calf health.

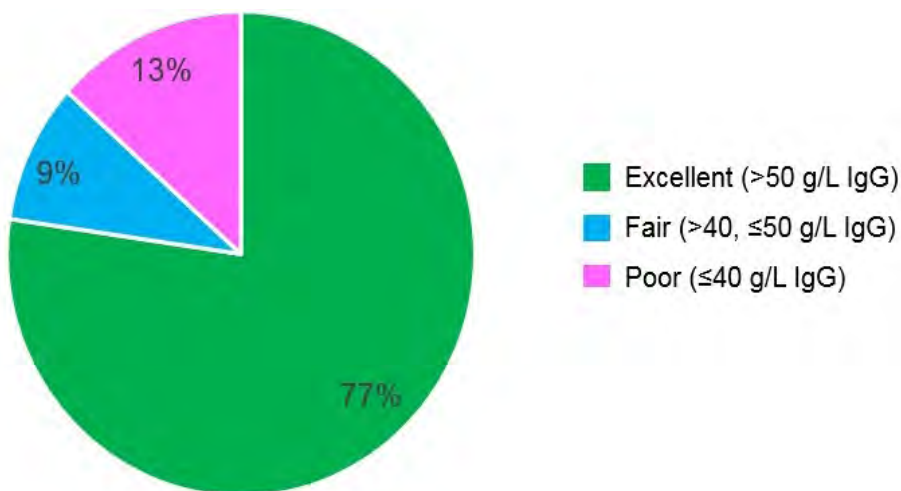


Figure 1. Percent of Calves by Quality of Colostrum Fed.  
Adapted from 2014-15 NAHMS Calf Study data.

### Quickness

As stated before, the goal is to give newborn calves four quarts (or 10% of body weight) of high-quality colostrum within its first four hours (the sooner the better!) and repeat in 12 hours or so for a total of eight quarts (or 20% of body weight) within first 24 hours.

How are we doing with regard to Q #3? Pretty well! The NAHMS study data show us the national average for all farms is 2.8 hours until the first feeding—well within the BMP goal.

### Cleanliness

Dr. Gooden calls Q #4 “sQueekey Clean”. Calves are babies; we need to feed them clean food. Cleanliness goals include minimizing bacterial loads (Total Plate Count <100,000 colony forming units/ml) and minimizing fecal-origin bacteria (Total Coliform Colonies <10,000 cfu/ml).

It may seem counter-intuitive, but the NAHMS data show larger operations practiced better sanitation practices than smaller farms. The majority of small dairies rinsed milk feeding equipment after each feeding, but the majority of large farms rinsed *and* *disinfected* equipment after each feeding. Rinsing alone can leave a milk film on equipment and this is an excellent place for bacteria to grow, endangering the health of young calves.

## Quantify

Successful passive transfer happens when we give enough quality and quantity of colostrum so a calf absorbs a protective amount of IgG antibodies. This form of immunity is immediate but temporary. Eventually, the absorbed antibody levels will decrease to below threshold levels of protection. Fortunately, the calf has been developing active immunity since birth using its own immune system so when maternal protection ceases, the calf will have its own fully-functional system. Indicated vaccinations given at appropriate times will also help calves weather disease risks; consult your veterinarian regarding vaccinations needed.



Photo 1. Clotted blood in a "red top tube," separated into three layers: serum, White Blood Cells, and Red Blood Cells. Adapted from [safetransfusionmanual.org](http://safetransfusionmanual.org).

How do we measure successful passive transfer? We can draw a blood sample on a calf that is 24 to 60 hours old, let the blood coagulate (clot) for 24 hours, and use a pipette to draw off and place a few drops of the serum (see Photo 1) into a refractometer. If using a Serum Total Protein refractometer, the goal is  $>5.2$  g/dl of total protein, which correlates with a protective amount of IgG in the bloodstream. If using a Brix refractometer, the goal is  $>8.4\%$ . Even higher readings are better, except if they are very high, which could indicate dehydration. Your veterinarian could perform this task for you or help you gain the skills needed. Table 1 shows NAHMS data reporting more routine monitoring of serum protein on large farms vs. small.

Failure of Passive Transfer (FPT) is a common underlying cause of poor-doing young calves that fall prey to diseases early in life and never catch up.

Identifying  $>10\%$  of calves with FPT indicates there is a system-wide colostrum problem, usually with either quality, quantity, or timing. Record keeping helps: document date and time of birth for every calf; source of colostrum given; time and amount given; method (bottle or tube); and name of person who fed.

To minimize the risk of colostrum-related diseases:


- Do not feed pooled colostrum to calves. Pooled colostrum is colostrum from multiple cows that has been mixed together; it is a good way to spread disease from one cow to numerous calves.
- Collect colostrum from clean udders using standard sanitary milking protocol. Cool to  $\leq 40^{\circ}\text{F}$  ASAP if feeding within 3 days; if not, freeze for up to one year.
- Do not borrow trouble, i.e. do not borrow colostrum from a neighboring farm or you may import serious diseases. Thaw frozen colostrum from your own farm using a water bath or use commercial colostrum replacer (not supplement)
- Heat treat all colostrum. This is similar to pasteurization, but at a lower temperature to preserve antibodies. To kill pathogens, heat colostrum to between  $133$  and  $135^{\circ}\text{F}$  for 60 minutes, stirring often and thoroughly.

## Odds and Ends

Other actions significantly differed between large and small farms and affected calf health. Only 26% of large dairies fed unpasteurized milk to calves, but 73 % of very small dairies performed this high-risk activity. Large farms fed more milk, fed more often, and fed higher protein milk replacers than smaller farms. Lastly, weaning ages differed greatly: average weaning age on very small farms was 11.6 weeks (37%

Herd Size					
	Very Small < 30 head	Small 30-99 head	Medium 100-499 head	Large >500 head	Average, all farms
Operations	4.9%	1.2%	5.5%	38.3%	6.2%
Heifer calves	3.6%	1.0%	6.8%	53.9%	35.3%

Table 1. Percentage of operations that routinely monitored serum proteins as a measure of passive transfer status of newborn heifer calves, and percentage of heifer calves tested on those operations, by herd size. Adapted from 2014 NAHMS Dairy Study publication, "Dairy 2014: Dairy Cattle Management Practices in the United States, 2014," table C.3.I.

of very small farms had average weaning ages above 13 weeks) and 8.9 weeks on large farms. As long as calves are healthy, gaining well, and consuming at least two pounds of calf starter grain for several days, earlier weaning decreases labor and feeding costs, which could be more important aggregated costs on larger vs. smaller farms. 

[http://msue.anr.msu.edu/news/monitoring\\_failure\\_of\\_passive\\_transfer\\_in\\_calves](http://msue.anr.msu.edu/news/monitoring_failure_of_passive_transfer_in_calves)  
[https://www.aphis.usda.gov/animal\\_health/nahms/dairy/downloads/dairy14/Dairy14\\_dr\\_PartI.pdf](https://www.aphis.usda.gov/animal_health/nahms/dairy/downloads/dairy14/Dairy14_dr_PartI.pdf)

[https://www.aphis.usda.gov/animal\\_health/nahms/dairy/downloads/bamn/BAMN03\\_GuideFeeding.pdf](https://www.aphis.usda.gov/animal_health/nahms/dairy/downloads/bamn/BAMN03_GuideFeeding.pdf)

### For More Information

<http://www.extension.umn.edu/agriculture/dairy/calves-and-heifers/>

## SNAP-To-It! @ Farmers' Market Program May 14 to October 8th, 2016

Join us at the Oregon City Farmers' Market and participate in the SNAP-To-It! @ Farmers' Market Program, a series of six educational farmers' market tours and chef's demos delivered on the second Saturday of the month, starting on \*May 14th and concluding on October 8th, 2016.

The program begins at 9:15 AM at the Information booth, where SNAP shoppers purchase market tokens with their SNAP EBT cards. Oregon City is one of four markets in the state participating in the "Double Up Food Bucks Oregon" Program. Tokens purchased by SNAP shoppers with their EBT card are currently matched up to ten dollars each market day. Thus, a ten dollar EBT redemption yields twenty dollars of market tokens; ten dollars of which is designated for the purchase of fresh fruits and vegetables.

With their tokens in hand, shoppers will participate in a guided market tour. They will be introduced to local farmers who will talk about their farms, and also discuss their produce offerings and pricing, along with tips for proper storage and preparation. The tour is followed by a chef's demo where shoppers watch fresh fruits and vegetables being prepared in simple, flavorful ways, and are provided with recipes and an opportunity to taste the end result.

At the conclusion of the program, shoppers will receive an insulated shopping bag, calculator, nutrition handouts and recipes, and another five dollars in market tokens.

SNAP-To-It! will provide shoppers with the opportunity to maximize their SNAP benefits and their food safety by increasing their knowledge, skills, and confidence to better manage their limited food resources, including how to purchase, store, and prepare fresh fruits and vegetables in easy new ways. Local farmers will experience increased sales of fruits and vegetables, leading to increased sustainability.

*The program is funded via a 2016 Clackamas County HEAL Grant.*

**\*Program dates: May 14th, June 11th, July 9th, August 13th, September 10th, and October 8th**

Contact Kelly Streit, Food & Nutrition Instructor, OSU Extension Service, Clackamas County, at kelly.streit@oregonstate.edu, or at 503-655-8631.

# Plant in a Box: A Solution for USDA-Inspected Poultry Processing?

By: Kathryn Quanbeck, Program Manager, Niche Meat Processor Assistance Network

**D**avid Schafer, owner and founder of Featherman Equipment, spends a lot of time thinking about small-scale poultry processing. “Having raised, butchered and sold pastured poultry since 1994,” he knows the “benefits and the bottlenecks of a poultry enterprise.” While much of the equipment sold by Featherman is geared towards very small-scale operations, David has been working on a solution for USDA-inspected processing for quite some time now. The model is called “Plant in a Box” and aims to be a turnkey answer for those looking to process chickens, turkeys, and other poultry under USDA inspection.

Where did he get the idea? “Like everything I’ve done, it was brought to me by my customers,” David says. His customers are increasingly sophisticated and, “not afraid of the regulations. They know their market and they know what they need.” While in the past, most customers were searching for equipment to process birds under the 1,000 and 20,000 bird exemptions, now more and more are looking for USDA-inspected solutions.

The Plant in a Box unit is built into a recycled shipping container: 40’ long by 8’ wide and 8’ or 9’ high (“high cubes” as they are often called). The unit comes ready to connect to water and sewer with all the required equipment in it for approximately \$80,000. A site pad, water, power, and a plan for managing effluent are not included and must be provided on site.

David estimates that a crew of three trained people can process about 500 birds per day and offers this math: “Say you process 500 birds per day, 100 days out of the year.

That’s 50,000 birds per year. If you charge \$3/bird for processing – the Midwest price – you’ll gross \$150,000 per year. Even at half that volume your payback is less than 3 years.”

The Plant in a Box unit takes a chicken from “crate to chill tank”: no storage is included in the space or throughput estimates. David recommends moving chilled poultry with large totes that can be moved with a forklift and wheeled into a separate packaging and storage area or back into the (cleaned) evisceration room for drying and packaging. A video of the Plant in a Box prototype [can be seen here](#).

## PIB in Action – Maple Wind Farm

The first Plant in a Box prototype started operations in 2013 at Maple Wind Farm (MWF) in Richmond, VT. “The ‘plug and play’ aspect was really nice,” says John Smith, poultry manager at MWF. “It was delivered and we were operating under inspection within a week or two.” MWF worked closely with David to fine tune the unit before arrival, as it was the first one in operation.



The Plant in a Box unit at Maple Wind Farm in Vermont. *Courtesy of Maple Wind Farm*

In that first year of operations, the facility was state-inspected (Vermont has an “equal to” inspection program). In 2014, MWF started operating under USDA inspection. MWF has increased their throughput and efficiency over the last two years. John recalls, “one of our best days was 320 birds slaughtered, processed and packaged. We did that with 4 people.” They haven’t reached David’s optimistic estimate of 500 birds per day with 3 people, but they are working toward it.

MWF would like to build upon the Plant in a Box infrastructure and expand their operations to have a separate space for cutting up and packaging birds. Right now, they slaughter in the morning, clean the evisceration room at lunch, and then cut and package in that same room after lunch. It works but involves hauling a lot of things in and out, which isn’t very efficient.

MWF financed the purchase of the PIB using a variety of different sources including the sale of development rights for one of the farm properties to the Vermont Land Trust, a no-interest loan from City Market (a local grocer) that they are repaying with product, and a grant from Vermont’s *Working Lands Enterprise Fund*.

Labor is one of their biggest costs. As with many meat processing facilities, keeping skilled staff busy year round is a challenge for MWF. “We’re a three season facility, but we are trying to move in the direction of keeping people busy year round so we can keep them on staff,” says John.

Key to keeping the facility busy is that MWF is its own largest customer, raising and marketing about 60% of the birds they process. They fill in the rest of their processing days with birds from other producers, charging processing fees of \$5.50/chicken and \$1/lb. for turkey. Their processing customers vary greatly in size: their largest brought them 3,000 birds in one year for processing and the smallest brought 25 birds/year. They slaughter 3-4 days per week and cut-up (their own birds only, this is not a service they offer) one day a week.



Poultry processing at Maple Wind Farm.  
Courtesy of Maple Wind Farm

John estimates that they need to do at least 20,000 - 25,000 birds per year to cover operating costs. MWF tries to process as many birds as possible on processing days. “Setup and cleanup accounts for a significant portion of our time, and this takes the same amount of time no matter how many birds we do.” Overall, John says the Plant in a Box unit has been a great move for them and he would recommend it to others.

David Schafer has a strong vision for expanding the Plant in a Box concept across the country. He would like to see multiple units in operation, able to share resources, tips, and tricks, and leverage their collective experience.

For more information on Plant in a Box, watch the archived Niche Meat Processor Assistance Network (NMPAN) [webinar here](#) or visit [David’s website](#). 🍴

New to NMPAN? [Learn more here](#).

*New to NMPAN? NMPAN is a network and info hub for people and organizations who want small meat processors to thrive. We offer tools and information for small processors and the farmers, marketers, and meat buyers who depend on them. Learn more about NMPAN and join our listserv at <http://www.nichemeatprocessing.org>*

# Local Foods and Farm Business Survival and Growth

By: Nigel Key, Agricultural Economist, Economic Research Service, U.S. Department of Agriculture

The market for local foods continues to expand in the United States. Farm operations with direct-to-consumer (DTC) sales of food increased from 116,733 to 144,530 between 2002 and 2012. Consumers have more opportunities to purchase food directly from producers, with 8,268 farmers' markets operating in 2014, up 180 percent since 2006. DTC marketing—where producers engage with consumers face-to-face at roadside stands, farmers' markets, pick-your-own farms, onfarm stores, and community-supported agricultural arrangements (CSAs)—is a substantially different business model from traditional marketing and is one that could help some farmers survive and prosper in a risky and competitive business environment. This article compares the farm business survival and growth rates of farms with DTC sales to those who market through traditional channels, such as grain distributors, processors, and wholesalers. Data show that farmers with DTC sales are more likely to remain in business than other farms but increase in size (measured by sales) more slowly. These differences in survival and growth rates could be explained by attributes of DTC marketing that result in different debt-to-asset ratios, farm income risk, and labor requirements, or possibly by differences in off-farm employment opportunities or preferences for farm versus nonfarm work.

## Farm Business Survival

Farms operate in a challenging business environment, with profits that can vary substantially from year to year as product prices, input prices, and yields vary. According to Census of Agriculture data, only 55.7 percent of all U.S. farms having positive sales in 2007 also reported having positive sales and the same farm operator in 2012. However, farmers who market food directly to consumers have a greater chance of remaining in business than those who market through traditional channels. Based on a comparison of farms across four categories (defined by annual sales), farmers with DTC sales had a higher survival rate (the

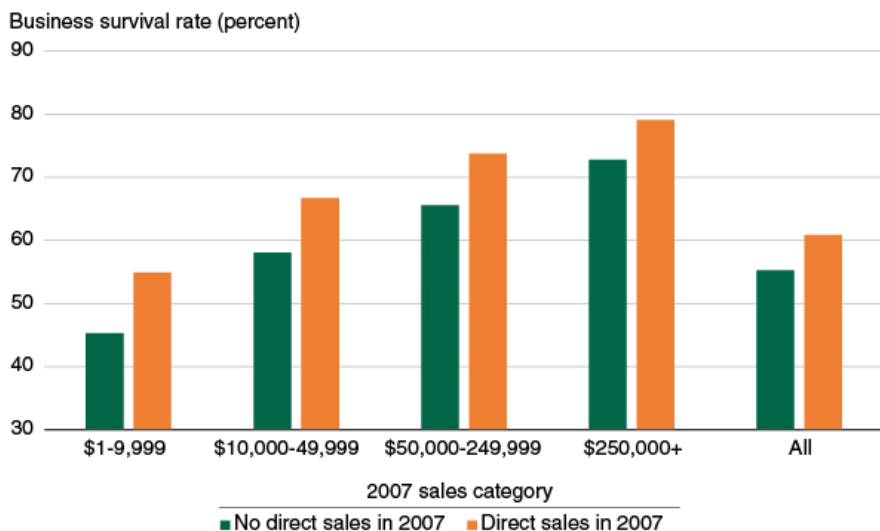
## Highlights

- Data from the 2007 and 2012 Agricultural Censuses show that farmers who market food directly to consumers have a greater chance of remaining in business than similarly sized farms who market through traditional channels.
- While farmers who directly market to consumers are more likely to continue farming than those who do not, their businesses expand at a slower rate.
- Differences in farm survival and growth rates for farms that market directly to consumers might be explained by differences in debt-to-asset ratios, farm income risk, labor requirements per dollar of income, or preferences for farm versus nonfarm work.

share of farmers who reported positive sales in 2007 and 2012) in each category. The differences in survival rates were substantial—ranging from 10 percentage points for the smallest farms to about 6 percentage points for the largest.

What is it about DTC marketing that seems to enhance farmers' chances of remaining in business? One advantage for DTC farms may stem from having lower rates of machinery purchases and land ownership than farms using traditional marketing. According to data from the 2012 Census of Agriculture, farmers who marketed directly to consumers owned \$20.82 worth of machinery per dollar of sales, compared with \$31.10 for those who marketed through traditional channels. And farmers selling directly to consumers owned \$240 worth of land per dollar of sales, compared with \$309 per dollar of sales for other farmers. Because they did not need to purchase as much machinery and land to achieve a certain level of sales, farmers with direct sales did not need to leverage as much of their wealth to obtain financing. Furthermore, Census data reveal that farmers with direct sales had annual interest payments of only \$7.85 per thousand dollars of owned assets, compared with \$10.55 for farmers with no direct sales. A lower debt-to-asset ratio should indicate

### Farms with direct-to-consumer sales had higher rates of business survival between 2007 and 2012



Notes: The survival rate is defined as the share (%) of Census respondents with positive sales in 2007 who also reported positive sales in the Census in 2012.  
Source: USDA, Economic Research Service using data from USDA, National Agricultural Statistics Service, Census of Agriculture, 2007, 2012.

plausible that total farm income is less risky for DTC farmers.

### Farm Business Growth

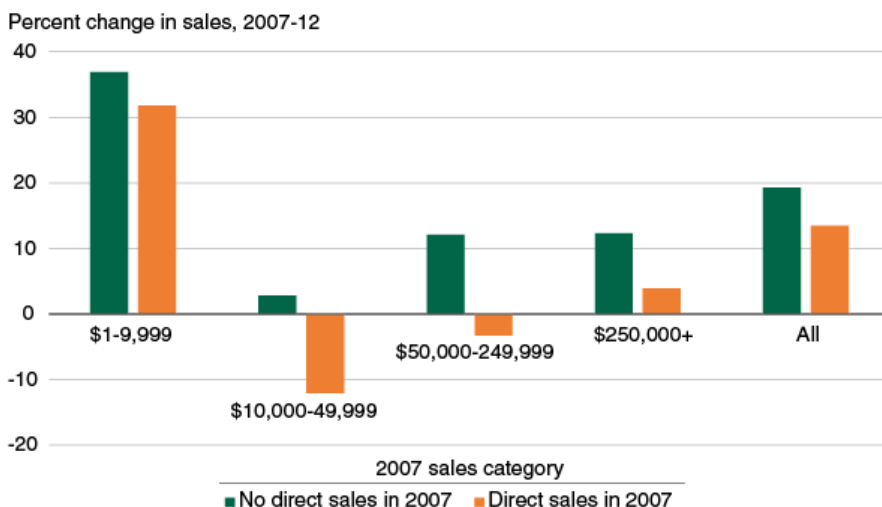
While farmers who directly market to consumers are more likely to continue farming than those who do not, their businesses expand at a slower rate. Among surviving farms in all sales categories, sales by farms using DTC marketing grew slower (had a smaller percent change in nominal total gross sales between 2007 and 2012) than those by farms with no direct sales. On average, surviving farmers with direct sales in 2007 increased their total sales by 13.5 percent between 2007 and 2012, compared with 19.3 percent for surviving farmers with no direct sales.

a better ability to repay loans and has been associated with a lower risk of small business failure.

Farm income risk also helps account for some of the differences in survival rates across farm types. For farmers who do not sell directly to consumers, profits can fluctuate widely because of changes in input and output prices and yields. Farmers who market to consumers are also exposed to these risks; however, these farmers derive some of their income from their marketing activities and not just production. Income from marketing depends on the margin between the wholesale and retail price and the time spent marketing. Even when input and output prices vary, the markup between the wholesale and retail prices should remain relatively stable. Hence, the additional income that can be earned from selling directly to consumers versus selling to wholesalers should not vary substantially because of price fluctuations. Therefore, it is

The difference in growth rates of sales may stem from differences in labor requirements. Selling directly to consumers through farm stands, farmers' markets, or CSAs is labor intensive. The 2012 Census data indicate that in every sales category, farmers with

### Farms with direct-to-consumer sales had smaller percentage increases in sales between 2007 and 2012



Notes: The sample consists of farms with positive sales in 2007 and 2012. The percent change in sales is defined as the difference in sales between 2012 and 2007, divided by the average sales between the periods.  
Source: USDA, Economic Research Service using data from USDA, National Agricultural Statistics Service, Census of Agriculture, 2007, 2012.

direct sales hire significantly more labor than farmers with no direct sales. Because farms that market through traditional channels require less labor, these farms can become larger before labor must be hired. In contrast, farms using direct marketing would need to begin hiring labor at a smaller scale of production. Transaction costs associated with hiring labor could provide a greater obstacle to expansion for farms with DTC sales.

The higher survival rates and slower growth rates for farms with DTC sales may be attributed to differences in off-farm opportunity costs. Studies have found evidence that small business survival depends not only on economic performance but also on the entrepreneur's human capital and alternative employment opportunities. Farmers with limited off-farm income opportunities would be more inclined to remain in farming, despite lower farm profits and less ability to expand the business. The Census data do not include a measure of time spent working on the farm, so one cannot evaluate the returns to labor from farming.

However, one can compare off-farm income indirectly by examining total farm household income across the farm categories. The data indicate that only 48.9 percent of farmers with direct sales reported annual household income greater than \$50,000, a statistically significant difference from the 51.2 percent of farmers with no direct sales. Additionally, 15.9 percent of farmers with direct sales reported less than \$20,000 in annual household income, a statistically significant difference from the 14.0 percent of farmers at that income level with no direct sales. The somewhat lower total household income suggests that farmers with direct sales may have less favorable off-farm income opportunities. If true, this situation could provide them with an incentive to remain in business even if they have less ability or opportunity to expand production.

Higher survival rates and slower growth for farms with direct-to-consumer sales may also stem from different attitudes toward farm versus nonfarm work. Researchers have found evidence that nonfinancial benefits from self-employment may encourage small business owners to remain in business despite

earning less income. There is also evidence that the nonfinancial benefits to farming (e.g., greater autonomy, independence, and lifestyle factors) are substantial. It is possible that farmers who sell directly to consumers derive greater nonfinancial benefits from their work—perhaps they enjoy interacting with their customers. This would provide a greater incentive for them to remain in business even with lower business expansion possibilities. *B*

This article is drawn from ...

**Trends in U.S. Local and Regional Food Systems: A Report to Congress.** Low, S., A. Adalja, E. Beaulieu, N. Key, S. Martinez, A. Melton, A. Perez, K. Ralston, H. Stewart, S. Suttles, S. Vogel, and B. Jablonski. U.S. Department of Agriculture, AP-068. January 2015.

[Article originally published in the USDA-ERS magazine *Amber Waves*, March 2016.]

## Eastern Oregon Food Systems Gathering

*Food. Farming. Food Security. Economic Development. Health. Education*

Oregon Food Bank and OSU Extension are teaming up to host a daylong community food system gathering in La Grande, Oregon, on Wednesday, May 18.

The gathering, a region-wide version of OFB's nationally known "Food, Education, Agriculture Solutions Together" or "FEAST" events, will bring together community food systems partners in Umatilla, Union, Baker, Wallowa, Grant, Harney, and Malheur counties.



Keynote speaker Lynne Curry will share an eyewitness account of food systems progress in Eastern Oregon as a food professional, volunteer, journalist, community organizer, and small business owner in Wallowa County for the last 15 years. Participants will then hear about a new Community Food Systems Indicators project, with "field reports" from around Eastern Oregon; plans for a community food assessment in Union & Baker Counties; and state and federal grant opportunities for community food systems work.

Significant time during the day will be dedicated to "open space" networking on a variety of topics, to connect people and projects across the large Eastern Oregon region.

The OSU Center for Small Farms & Community Food Systems is pleased to be collaborating with our Eastern Oregon Extension colleagues on this event and the Union/Baker community food assessment to be conducted over the coming year.

The event will be held at the Union County Extension Office in La Grande and is free to attend. A soup and salad lunch will be provided. Register by May 8 at <http://bit.ly/1TWoPJy>.

Questions? Contact Oregon Food Bank's Tracy Gagnon: [tgagnon@oregonfoodbank](mailto:tgagnon@oregonfoodbank) or 503-853-8755.

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# Food Summit Helps to Connect the Mid-Valley

By: Lexi Stickel, Community Food System Coordinator, Marion-Polk Food Share

On February 6<sup>th</sup> at Willamette University in Salem, people gathered from across the Mid-Willamette Valley to learn, share, and strengthen the community food system. The first ever Mid-Valley Food Summit had two main goals: to share information from the recently completed Community Food Assessment with the broader community and to build networks and connections among community members who are actively engaged in community food system work.

The idea for a Food Summit grew out of the Community Food Assessment (CFA) process in Marion and Polk counties last year. One of the main opportunities for action that emerged from the grassroots community organizing process, led by a RARE AmeriCorps member, was to create space for networking and leadership among the various food system efforts across the region.

Although there is not one overarching food system organization in Marion or Polk counties, there are valuable projects, organizations, and initiatives happening throughout the Mid-Valley. Leaders from some of these groups, spearheaded by Marion-Polk Food Share, created an advisory committee to plan the Food Summit. The committee included OSU Extension, local farms, food processors, county and city government, academia, and others. Oregon Food Bank's Community Food System team provided guidance.



Mid-Valley Food Summit data collection.  
Photo provided by Lexi Stickel.

The Food Summit kicked off on Friday, February 5<sup>th</sup> with a farm tour of Minto Island Growers in Salem. Elizabeth Miller and Chris Jenkins discussed everything from the soil on their land to their tea plant propagation and CSA program. Tour participants were able to grab fresh kale and cabbage from the field while learning all about the rewards and challenges of being a small-scale farmer in the mid-Valley.

Bright and early on February 6<sup>th</sup> nearly 200 farmers, gardeners, volunteers, nonprofit organizers, and more flooded into Willamette University to attend the Food Summit. In the morning, participants heard a presentation about the Community Food Assessment and ten 5-minute talks from local people actively engaged in the food system. Presenters included small and large scale farmers, food processors, restaurant owners, as well as representatives from a food co-op effort in Silverton, the Confederated Tribes of Grand Ronde, a community gardening nonprofit from Woodburn, WIC, WorkSource Oregon, and a gleaning nonprofit.

Lauren Gwin from OSU's Center for Small Farms and Community Food Systems did a keynote presentation on food system networks across Oregon as well as led attendees in an engaging activity. After a delicious, locally-sourced lunch, attendees headed into breakout sessions on a range of topics. Popular choices focused on linking buyers and producers, creating access to local food for all, building the local food economy, and learning about the farmworker movement in Oregon.

At the end of the day, attendees were invited to share their ideas for improving the community food system

in the mid-Valley. Top responses were increasing local food access, building a local food network, and creating a local food guide. Even as volunteers were cleaning up after the end of the Food Summit, community members lingered to network and talk about exciting opportunities for the future of the community food system in the Mid-Valley. *ℳ*

For more information or to get involved, contact Lexi Stickel: [astickel@marionpolkfoodshare.org](mailto:astickel@marionpolkfoodshare.org), 503-581-3855 x333

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# Scientists Urge New Model for Soil Carbon

Adapted from article by Blaine Friedlander in the Cornell Chronicle, Nov. 2015 by Lauren Gwin, Small Farms Program, Oregon State University

A growing number of “carbon ranchers” and “carbon farmers” across the U.S. and globally are implementing land management practices specifically to sequester more carbon in the soil. By “locking up” carbon in long-term storage in the soil, these innovators aim to slow or even reverse climate change. Such practices include cover cropping, reducing tillage, and managed grazing systems.

The agro-ecological value of these practices, including their connection with soil carbon management, is not in dispute. Neither is the importance of the relationship between soil organic matter and carbon.

However, the idea that carbon can be locked up in long-term storage in the soil is no longer valid, according to new soil science research.

In a recent article in the journal *Nature*, soil scientists from Oregon State University and Cornell University argue convincingly that the “humic” model of soil carbon is not accurate. Johannes Lehmann (Cornell) and Markus Kleber (OSU) have proposed a new soil carbon model supported by laboratory analysis techniques that weren’t available when the humic model was developed.

The “humic model” is based on the idea that a stable substance called “humus,” once it is formed from decaying leaves, grass, and plant matter, can sequester large, complex molecules of carbon for hundreds or even thousands of years.

But as co-author Johannes Lehmann explained, “This understanding could not be confirmed by modern analytical tools. In the last 10 years, soil scientists have clearly shown that humic substances and large complex molecules are not formed in soil.”

The emerging understanding of soil organic matter accounts for underlying microbial processes. These new concepts – such as the “soil continuum model” – could assist today’s scientists by accurately accounting

for soil carbon, thus helping to forecast climate change and warming temperatures.

Nutrient, energy and carbon exchanges between soil organic matter, the soil environment, aquatic systems and the atmosphere are an engine that drives agricultural productivity, water quality and climate.

“Soil organic matter makes up and absorbs more carbon than the world’s vegetation and the atmosphere combined,” Lehmann said. “So small changes in the soil carbon content have huge impacts on the climate.”

Accurate predictions of soil carbon’s behavior are therefore essential. “That’s only possible,” Lehmann said, “if we have the right kind of model and we can mathematically predict what could happen in 50 or 100 years from now.”

*For a copy of the paper, contact Lauren Gwin, OSU Center for Small Farms & Community Food Systems, [lauren.gwin@oregonstate.edu](mailto:lauren.gwin@oregonstate.edu)*

Abstract of the paper, “The contentious nature of soil organic matter,” by J. Lehmann and M. Kleber, published in *Nature*, 12/3/2015, v. 528.

The exchange of nutrients, energy and carbon between soil organic matter, the soil environment, aquatic systems and the atmosphere is important for agricultural productivity, water quality and climate. Long-standing theory suggests that soil organic matter is composed of inherently stable and chemically unique compounds. Here we argue that the available evidence does not support the formation of large-molecular-size and persistent “humic substances” in soils. Instead, soil organic matter is a continuum of progressively decomposing organic compounds. We discuss implications of this view of the nature of soil organic matter for aquatic health, soil carbon–climate interactions and land management.

Full article at: <http://www.nature.com/nature/journal/v528/n7580/full/nature16069.html>.

# Brietenbush Farmer to Farmer: Ahas and Uh-oh!

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

**E**very February, small and mid-sized organic farmers from the Pacific Northwest gather at Brietenbush Hot Springs for a three day farmer-to-farmer exchange. The gathering is unique, in that the programming and sessions are completely organized and facilitated by farmers, with virtually no participation from agricultural professionals, Extension staff, or industry representatives. The information exchanged is hard-won, practical and peppered with the humor and inspiration of resourceful and problem-solving farmers. The exchange opens with a session of “Ahas and Uh-ohs” with lessons farmers gleaned from the past season.

## **Highlights from this year include the following:**

One farm struggled with a pernicious, rhizominous grass (probably quackgrass) for many years. In the spring of 2015, they disced up the grass and then planted buckwheat. The grass was severely knocked back for the entire season.

Another farmer realized that he is unable to do everything on the farm so learned to be a better delegator.

A farm near Portland had a turbulent year financially in 2014, so took time in the winter of 2015 to do some

big-picture planning and re-visioning of the farm. They ended up growing too much of certain crops that they couldn't move through regular channels and so approached New Seasons Market. The result was a new relationship with New Seasons, which now regularly buys a number of products from them.

Another farmer had always maintained a relaxed attitude about giving employees days off but realized that he needed the consistent help, so developed a protocol for days off.

A farm from Washington State is grappling with unaffordable healthcare for their employees and still hasn't figured a great solution. They also highlighted the importance of doing variety trials every year even on the most reliable varieties, explaining that they are able to get free seed from seed companies and continually refine their varietal selections.

A CSA farmer explained that she learned a new way to handle negative feedback from CSA members. Instead of becoming defensive, she now expresses gratitude for the feedback and offers a farm product as a reward for providing feedback. She also discussed the importance of communicating clearly with employees about a



The farmers of the Brietenbush farmer to farmer exchange.  
*Photo provided by Maud Powell.*

farm's policy on posting photos on social media. Many younger employees are accustomed to posting on social media forums all the time, and may forget that a farmer wants to present a certain image of their business or may be concerned about their privacy.

Two farm managers expressed their appreciation for working for a farmer who is a very talented marketer. They also realized how important employee retention is, as retraining a new crew takes a lot of time.

Another farmer decided to have one worker make lunch for the entire crew every day, and everyone benefited. Lunch became the highlight of the day and did wonders for employee morale.

One farmer described the joys of scaling back; she has stopped doing farmers markets and focused instead on making her farm store more profitable. She encouraged other farmers to "stop putting on more hats."

A farm in the Willamette Valley had declining sales at one of their mainstay markets. They changed the market staff and the design of the booth and saw sales increase immediately.

A farm couple in Southern Oregon with a relatively new farm stand had stocked up on produce right before Thanksgiving but found that no one was stopping by. They posted messages on social media and saw an immediate increase in the volume of customers and sales.

One farmer had participated in the OSU Extension Cost Study/Profitability Cohort during 2015, and had tracked many of his labor costs. Based on the numbers he crunched at the end of the season, he realized that direct seeding crops was almost always more profitable than transplanting; that he needed to charge more for minimum deliveries (\$75); and that farmers markets took too much time and labor to be profitable for his farm.

Another farm couple realized that they don't want to farm forever so are looking into succession planning.

A farmer said his family transitioned from sleeping on futons to latex mattresses and everyone is happier and better rested.

One farmer worked with the organization Rogue Farm Corps and hosted four farm interns for the season. She

enjoyed the experience of having a "cohort" of interns. Another farmer pointed out to her that if you have more than four un-related farmers you need to be certified as a workers camp with Oregon OSHA.

Another farmer discussed the benefits of getting workers comp and generally complying with government regulations. In the past, he had tried to fly under the radar of some government regulations, which created a lot of stress and worry for him.

A farmer from Washington explained the importance of clear structure and communication with employees. He has come up with different titles for employees to help them be more comfortable in their differing roles.


Another farmer also discussed the merits and profitability of scaling down. He has dropped a couple of markets and decreased his crew size, but increased his net income significantly.

An Oregon farmer talked about the challenges of having her employees constantly looking at screens and having headphones on. She met with her employees and talked about protocols they could all be comfortable with.

One farm gave up their CSA last year, added more wholesale accounts and increased their agritourism events. They had hosted benefit Farm to Fork dinners in the past, but this year treated the dinners as an income stream and were successful.

Another farmer described the experience of walking out to his greenhouse and finding a blanket of flea beetles on his starts. He realized that a mustard seed field was being combined next door, and underscored the importance of paying attention to what your neighbors are doing.

One farmer said that she had suffered from back pain for many years. She now does ten minutes of Foundation Training exercises every day and has been pain-free since.

The Aha and Uh-oh session was followed by three break-out sessions in which farmers exchanged tips and advice on everything from soil fertility to farm stands to familial relationships. In between sessions, farmers networked informally and enjoyed soaking in the tubs. 

# Field to Fork: An Agricultural Field Day

By: Janice Cowan, OSU Extension, 4-H Youth Development and Home Horticulture

Many youth believe their food just comes from the store in nice packages. In 2007, the Baker County OSU Extension Service, the Baker County Farm Bureau, the Soil & Water Conservation District, and the Baker County School District came together and designed an annual outdoor agricultural event for 5th grade youth. Ten years later, more than 1800 youth have participated in "Field to Fork."



The purpose of the Field to Fork program is to provide interactive learning stations that demonstrate where food comes from and how it gets to the store. The program includes a series of classes taught by university faculty and community professionals:

1. Soils: More than Dirt – students make a soil horizon;
2. Plants: Growing in a Glove – students do a seed germinating experiment;
3. Water: The Incredible Resource – students review the water cycle, watersheds, and water contamination;
4. Harvesting a Crop – students learn about equipment and the challenges farmers encounter when harvesting;
5. Commodities: A Day Without Agriculture – students learn where everyday products come from;
6. Let's Put It All Together – students review all the classes through an active game.

The Baker County Cattlewomen prepare a lunch, made from commodities grown in Baker County. Teens from various Future Farmers of America Chapters volunteer to be group class chaperones and help the instructors conduct their classes.

Financial support is provided by local businesses, including Cattle Companies, Feed and Seed, Farm Credit Services, school parent-teacher organizations, Livestock Supply, and the Farm Bureau.

Grants from the OSU 4-H Foundation and Bob's Red Mill sustain the program from year to year.

An end-of-session survey asks the youth to rate their knowledge learned from each class session. Results have shown that this program has improved their understanding of agriculture and food production. And the teachers tell us the kids love it! *ℳ*



# Poultry Feed Trials at Berggren Demonstration Farm

By: Angela Andre, Farm Director, Phoenix Farm Enterprises

**I**nterest in alternatives to conventional poultry feed – including feeds that are both GMO-free and not corn- and soy-based – is growing among local poultry producers, partly in response to requests from their customers. Given the cost and limited supply of these alternative feeds, producers need to assess the effect on overall profitability.

The Berggren Demonstration Farm (now Phoenix Farm Enterprises, Inc.) in Lane County undertook on-farm research to investigate the production and economic differences of pasture-raising Cornish Cross broiler chickens using conventional feed or GMO-free feed. The research, conducted during the 2015 growing season, was supported by a Western SARE Farmer and Rancher Grant. OSU Poultry Specialist Dr. James Hermes was technical advisor for the project.

The research involved side-by-side production trials but also tracked sales of the birds to see if there was a consumer preference for either and if the higher cost of production (for the birds fed with GMO-free feed) could be offset by a higher price per pound.

The three related questions addressed by the research were:

1. Given a standardized ration and environmental conditions, what is the input cost comparison between GMO-free and conventional feed to pasture-raise Cornish cross broilers?
2. Given a standardized hatch-to-slaughter timeline of seven weeks, how does the dressed weight compare between these treatment groups?
3. Are consumers willing to pay more at a farmer's market for chickens raised on GMO-free feed?

## Project Methods

We ran four sets of side-by-side trials of 150 Cornish Cross chickens divided into two sides of 75 chickens each. Chicks were purchased from Jenks Hatchery in



*Photo provided by Angela Andre*

Tangent and picked up at the hatchery on the day of hatch. Chicks were set up in our brooder house with identical set ups of feeders and waters and heat lamps. Chicks were given electrolytes in the water for first two days.

The GMO-free chicks received the “Corn, Soy, and GMO-Free Grower” feed from Union Point Custom Feeds starting with one 50 lb sack of chick starter and then fryer ration pellets. This feed contains peas, wheat, oats, 18% pumpkin seeds, and other dense nutrition (full nutritional info here: <http://unionpoint.com/wp-content/uploads/2010/03/Layer-Feed-Printable-Product-Label.pdf>).

Conventional fed birds were fed Payback Fryer Ration purchased from Pleasant Hill Feed, starting with one sack of crumbles and then pellets.

Both feeds were bought at the one ton discounted rate of \$559.50 for Payback Fryer Ration and \$960.00 for Union Point GMO Free fryer ration.

Chickens were fed free choice, with feeders filled twice daily. Once chickens reached 3 weeks of age, feeders were removed at night to prevent overeating.

Feed was stored in separate metal trash cans with cards taped inside lids to track numbers of sacks and any mortalities. Feed cans were moved with birds from brooder house to chick shacks to field. Cards were collected and tallied when the birds went to the processor.

The birds spent two weeks in the brooder house, two weeks in the chick shacks, and three weeks on pasture in electronet fencing paddocks, ~5625 sq. ft., with mobile shade structures. The paddocks were moved once a week. Brooder and chick shacks had access to fenced outdoor areas.

On the day of processing, chickens were loaded into crates marked GMO free or conventional to enable separation and tabulation at Mineral Springs Poultry Processing <http://www.mineralspringspoultry.com/>

To tally the weights we divided weights into .5 lb increments e.g. 2.5-3lbs 3-3.5lbs and marked how many of each from each group. Weights did not include livers or hearts.

For more on methods, visit the project video: <https://www.youtube.com/watch?v=j8mDjaw7psw&feature=youtu.be>

## Project Results

### (1) Growth of Birds

Feed consumption: GMO Free averaged 8.85 lbs per bird; conventional averaged 10.9 lbs per bird

#### Dressed

Weight: The difference in dressed weight of the birds was 3.4 lb. avg. for GMO Free vs. 3.66 for Conventional. We believe that this difference in dressed weights can be at least partly

attributed to the fact that once there were fewer birds in the Conventional group due to mortalities, there was more room at the feeder. In addition, the GMO free feed was likely more nutritionally dense, causing the birds to feel “full” so that they didn’t eat as much.

Feed to Meat Ratio: GMO Free average = 2.58/1; Conventional average = 2.98/1

Mortality rate: GMO Free = 2%; Conventional = 6.5%

Cost Difference: We calculated a cost of production that included chicks, feed, labor, processing, and transportation. On average, the GMO free birds cost \$0.41 per pound or \$1.40 per bird more than the conventional birds.

### (2) Pricing of Birds

We increased the cost of the GMO free birds by \$0.50/lb to reflect the higher cost of production, but we found that most consumer direct customers had no problem paying the extra amount. Pricing was as follows:

#### *Conventional birds:*

- Per pound: \$3.50/lb wholesale (10+ birds); \$4/lb retail
- Per bird: \$12.25 average for wholesale; \$14.00 for retail

#### *GMO-free birds*

- Per pound: \$4/lb wholesale, \$4.50/lb retail
- Per bird: \$12.60 wholesale, \$14.17 retail



Photo provided by Angela Andre


### (3) Consumer Preferences

- Our CSA members received GMO free birds, because that is what they wanted.
- We sold slightly more conventional birds than GMO-free birds through Lane Local Foods, a wholesale buyer. This was likely because LLF adds an additional 30% markup, which made the GMO Free birds considerably more expensive.
- At the Springfield Farmers' Market, more customers purchased the GMO Free birds.
- Restaurants chose the less expensive conventional birds; they also selected smaller sized (3-3.5 lb) birds.
- Customers who bought at our farm stand overwhelmingly chose GMO Free birds; they selected larger birds.
- A food buyers' club, "Flock Stock and Baby," in Eugene buys our birds in bulk at the wholesale rate; their customers also chose GMO free birds.

To assure that the GMO-free feed did not adversely affect the taste of the chicken – critical to customers coming back for more – we did a comparison taste test at the Springfield Farmers' Market. Customers had no clear taste choice, and when our team sampled the two types, we didn't discern a taste difference either. We expect that the fact that both sets of birds were raised on pasture was more important to taste than the specific feed.

### Conclusion and next steps

As a result of this research, we have decided that for the next growing season we will only use the Union Point GMO Free feed for our meat chickens. We are hoping that with increased demand for this feed, more local grain and forage farmers will start growing the components necessary to make the feed. That would lower the input costs for Union Point and, we hope, allow that savings to be passed on to poultry farmers. In addition, next season Phoenix Farm Enterprises, Inc. will be doing a trial planting of feed peas, with the goal of providing most of the components for a custom feed for the farm.

If you have questions or would like to receive the full research report, contact Angela Andre, Farm Director, at [angela@interact-nature.com](mailto:angela@interact-nature.com) 

### Project team

- Jared Pruch, Project Director/Grant Writer  
Cascade Pacific RC&D
- Katy Giombolini, Outreach Coordinator Berggren  
Demonstration Farm
- Dr. James Hermes, OSU Poultry Specialist,  
Technical Advisor
- Kristi Jensen, WSARE
- Angela Andre, Farm Director

***Phoenix Farm Enterprises offers DIY Poultry Growing and Processing Workshops the last Sunday of each month from May through September. The cost is \$25 per farm; lunch is an additional \$5.00 person. Participants are welcome to bring up to five of their own birds to process, for \$1 per bird.***

## Vegetable Insect IPM Series



Greenhouse and early season pests March 30, 2016 from 1:00 – 4:00 pm
Flea beetles, cucumber beetles and symphylans June 29, 2016 from 9:00 – 1:00 pm
Carrot rust fly, cabbage maggot and others September 8, 2016 from 9:00 – 1:00 pm

All classes will be held at the  
North Willamette Research and Extension Center  
15210 NE Miley Rd, Aurora, OR 97002

Check the Small Farms Website in mid-February for Agendas and Registration: <http://smallfarms.oregonstate.edu>

# Calendar

## April

### **12 -Managing Spotted Wing Drosophila Webinar**

All-seasons approach to monitoring and managing spotted wing drosophila. 10:00 AM - 11:30 AM. WEBINAR. For more information contact Sharon Selvaggio at [sselvaggio@pesticide.org](mailto:sselvaggio@pesticide.org) **FREE**

### **25 - Development of Value-Added Food Products Using Fruit & Wine Grape Pomace**

Designed to provide knowledge and hands-on experience to develop value-added food applications using pomace from fruit juice processing and winemaking. Fruit and wine grape pomace are good sources of bioactive compounds (polyphenolics as antioxidant and dietary fiber), and can be used as a functional food ingredient in a wide range of food products. 8:30 AM - 4:00 PM. Food Innovation Center, 1207 NW Naito Parkway, Suite 154, Portland, OR. Contact: Dr. Yanyun Zhao at 541-737-9151 or [yanyun.zhao@oregonstate.edu](mailto:yanyun.zhao@oregonstate.edu) **\$100**

### **28 - Rural Living Basics: Living with Your Well & Septic System**

learn the basics of groundwater, water wells, and septic systems. Learn steps to protect the health of your family, neighbors, animals, your property investment, and the safety

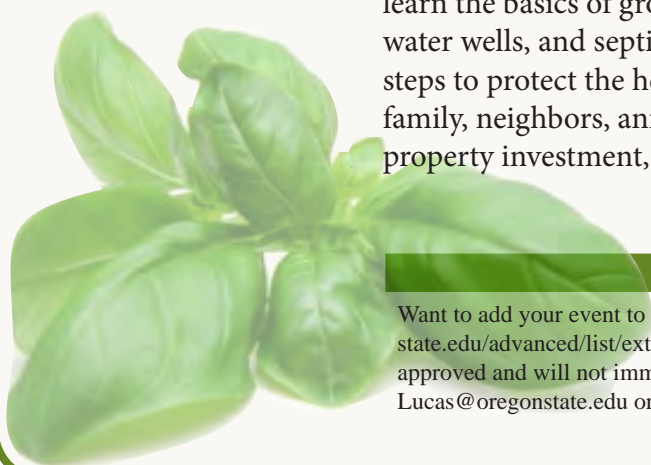
of groundwater resources. 6:30 PM - 8:45 PM. Stayton Community Center, 400 W. Virginia Street, Stayton, OR. Contact: [Chrissy.Lucas@oregonstate.edu](mailto:Chrissy.Lucas@oregonstate.edu) or 541-766-3556 **FREE**

## June

### **29 - Vegetable Insect IPM Series - Cucumber, Flee Beetles, & Symphylans**

workshop will cover Integrated Pest Management principles, pest and beneficial id, scouting and trapping, insect life cycles, disease transmission and organic strategies for managing pests. 9:00 AM - 1:00 PM. North Willamette Research and Extension Center, 15210 NE Miley Rd, Aurora, OR. Contact Heidi Noordijk at [heidi.noordijk@oregonstate.edu](mailto:heidi.noordijk@oregonstate.edu) **\$\$\$35 per class all three for \$75**

***We add events everyday so check our online calendar at for the most up to date events***  
***<http://smallfarms.oregonstate.edu>***



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](mailto:Chrissy.Lucas@oregonstate.edu) or 541-766-3556