

Enhancing Organic Agriculture in Oregon

Research, Education, and Policy

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In partnership with Oregon Tilth, Inc.

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Shaina Bronstein harvests eggplant at the OSU Southern Oregon Research and Extension Center (SOREC) teaching farm in Central Point.

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What is needed to enhance organic agriculture in Oregon? We began the process of answering this question by assessing the research, education, and policy needs of Oregon’s organic sector from several perspectives. This report of the first phase of our results is intended to provide guidance, encouragement, and a reliable resource for researchers, educators, and policymakers who can help meet those needs.

We consulted three different groups of people for this project—farmers¹, researchers, and food system stakeholders—at two different scales, state-wide and sub-regional. Our results resemble a conversation among these groups. Here we not only tell the story that emerged from that conversation but encourage its continuation.

¹ We use “farmers” in this report to represent operators of farms, ranches, and dairies.

METHODS

Survey

In 2009, 408 Oregon Tilth certified farmers in Oregon, Washington, and Idaho received a four-page questionnaire with their certification application.² The questionnaire, created by Oregon Tilth research and education staff, asked for grower views on several issues to help inform future research and education plans. The survey was conducted informally, without standard scientific survey procedures, but was sufficiently systematic to provide useful information. One hundred of the 106 returned surveys were from Oregon farmers and are used in this report. The response for Oregon represents farmers in 33 of the 36 counties. The results both provided insight into grower views and helped shape the rest of the needs assessment by suggesting topics for the focus groups and, in those groups, stimulating valuable discussion with farmers and food system stakeholders.

Interviews

In 2011, interviews were conducted with 10 Oregon State University researchers involved to a significant degree with research relevant to organic agriculture.³ This group represents most of the crop-related, organic-relevant research currently conducted at Oregon State University.

Focus groups

During 2010, three focus groups were conducted in the Rogue River Valley of southwest Oregon. One consisted of organic farming and food system stakeholders, including local retailers, farmers' market managers, produce distributors, farm to school program staff, and nonprofit organizations that advocate for sustainable agriculture. The other two sessions consisted of organic farmers representing annual and perennial and livestock production systems. There were a total of 25 participants in the focus groups. Stakeholders were recruited from contacts with the Oregon State University Small Farms Program faculty in southern Oregon. Farmers were recruited from a current list of Oregon Tilth certified farms in the area.

The Project

This project is an outgrowth of the innovative partnership between Oregon Tilth, Inc. and the Oregon State University Small Farms Program. Our assessment is on part of the multi-faceted strategy of the partnership that includes education for beginning and transitioning farmers, and applied research on cover crops and nitrogen management in organic production systems.

We conducted our assessment between 2009 and 2011, using a survey, focus groups, and interviews on two geographic scales—the state as a whole and southwest Oregon in particular (see “Methods” sidebar). Organic agriculture, by its very nature, is site-specific. The statewide assessment yielded valuable information about general trends and needs, while the regional specificity allowed more on-the-ground relevance.

The Status of Certified Organic Agriculture in Oregon

Oregon accounts for 3 percent of U.S. certified organic acreage, 5 percent of its farms, and 5 percent of national farmgate sales. Compared with other states, Oregon ranks fifth in number of organic farms and fourth in organic sales.⁴

Oregon's favorable growing conditions (in terms of rainfall and temperatures) are shaped by its maritime and continental climates. The state's organic farmers also benefit from tremendous, statewide consumer interest in sustainable food—local or organic or both.

The Statewide Picture

Our statewide picture of organic farming comes from Oregon Tilth's survey of farmers and our interviews with Oregon State University researchers.

The farms we surveyed

Farms participating in the survey varied in size from very small to moderately large operations, ranging from 0.5 acre to 1,750 acres. To a large extent, this reflects the variety of types of certified organic operations in Oregon, with western Oregon operations being larger in number and smaller in size, and central and eastern Oregon operations being fewer in number but larger in size. The initial year the farms were certified ranges from 1982 to 2010.

² 408 Tilth certified growers in Oregon, Washington, and Idaho received the survey. 383 growers were in Oregon, 14 in Washington, and 10 in Idaho. 106 surveys were returned. 100 surveys were from Oregon growers (26% of surveys sent to Oregon growers) and 6 were from Washington and Idaho growers.

³ The researchers were selected as a purposive sample. A purposive sample is a non-representative subset of a larger population. It is subject to bias. In this instance, the bias is toward researchers involved in organic crop production research.

⁴ USDA-NASS Census of Agriculture Organic Production Survey 2008. When Washington and Idaho are added in, the Pacific Northwest accounts for 8% of U.S. acres, 13% of farms, and 16% of national organic sales.

Interestingly, nearly 40 percent of farms were certified prior to the 2002 implementation of the National Organic Program; the balance (about 60 percent) was certified after.

The types of farms that responded to the survey included crop- and livestock-oriented operations (see Table 1). Because some farms are engaged in more than one type of operation, there is duplication within the categories. For instance, farms are often engaged in both vegetable and fruit production or in both livestock/dairy and forage production. Eight farms listed additional categories, including grains, lavender, mushrooms, and wild edibles.

Table 1. Type of Operations by Cropping System

Type of Operation	Number	Percent
Fruit/Berry/Wine grape	35	27
Vegetable	34	26.5
Forage/Hay	28	22
Dairy	18	14
Livestock (meat)	11	9
Nuts	2	1.5
Total	128*	100

*The total includes farms listed in multiple categories; N=100

What farmers across the state said

Farmers were given a questionnaire created by Oregon Tilth with a list of 14 management, production, and policy items and were asked whether they consider these items barriers to production and profitability. The top eight barriers across production systems are listed in Table 2.

Table 2. Barriers to Production and Profitability

Barriers *	Percent of farmers
1. Weed management	50
2. Costs of production	47
3. Farm labor	33
4. Fertility management	32
5. Yields	26
6. Insect pest management	26
7. Marketing	25
8. Access to inputs	25

*Determined by a minimum response of 25 percent.

Oregon Tilth Grower Questionnaire

The 14 management, production, or policy items (in alphabetical order, outlined in the Oregon Tilth grower questionnaire:

- Access to inputs (seed, feed, fertilizer, et cetera)
- Compliance with organic regulations
- Costs of production
- Disease management
- Farm labor
- Fertility management
- Food safety
- Harvest/postharvest
- Insect pest management
- Marketing
- Soil quality/cover crops
- Transplant production
- Weed management
- Yields

Among the farmers surveyed:

- Nearly half identified weed management and costs of production as barriers
- About one third indicated labor and fertility management as barriers
- Around one quarter considered yields, insect pest management, marketing, and access to inputs as barriers
- The number of producers in each cropping system (e.g., animal versus plant) influenced the results. No policy items were ranked in the list of top eight barriers.

When we look at the top three barriers identified by each production system (Table 3), similarities and differences emerge that divide the farmers into three groups: vegetable and fruit, livestock and dairy, and forage and hay. Viewed in this manner, the findings show the specific issues associated with each major farming system, plus some similarities.

Table 3. Top three barriers identified by vegetable and fruit, livestock and dairy, and forage and hay growers

Vegetables (34): *	Fruits/Berries/Grapes (35):
1. Weeds (62%)**	1. Weeds (57%)
2. Cost of production (56%)	2. Cost of production (46%)
3. Farm Labor (43%)	3. Farm labor (43%)
 Dairy (18):	 Livestock (11):
1. Cost of production (50%)	1. Cost of production (58%)
2. Access to inputs (50%)	2. Yields (50%)
3. Yields (40%)	3. Access to inputs (50%)
 Forage/Hay (28):	
1. Access to inputs (48%)	
2. Weeds (45%)	
3. Fertility (39%)	

* Numbers in parentheses represent number of responses.

**Percentages in parentheses represent percent of those responses.

Not surprisingly, high-value plant-oriented systems (e.g., vegetables and fruits) share weeds and farm labor as barriers. Livestock and dairy systems, with greater dependence on outside inputs (e.g., feed), identify access to inputs as a barrier. Here forage and hay systems overlap with the plant and animal systems, citing weeds (common with the plant systems) and access to inputs

(common with the livestock systems) as barriers. Forage and hay systems also identify fertility as a barrier, possibly reflecting the tendency for hay production to export plant nutrients off the farm. Nearly all the systems share cost of production as a barrier—presumably meaning the higher cost of organic inputs and labor.

The researchers we interviewed

The 10 Oregon State University (OSU) researchers we interviewed about the research needs of organic farmers have each been involved with organic or sustainable agriculture research from 6 to 35 years. Collectively, their expertise spans: soil and plant disease management; compost; cover crops and rotation; biological controls; nutrient management; tillage/no-till systems; plant genetics and variety development; and the economics, policy, and supply chain dynamics in vegetable, fruit, and crop systems.

What the researchers said about research needs

The research needs discussed during our interviews fell largely into the categories of pest and disease management, weed management, breeding/varieties, seed saving, nutrient management, and socioeconomics/policy. The latter was the least discussed, primarily because all but one of the researchers we interviewed focus on production research. That said, most researchers were aware of the market dynamics and nonproduction-related challenges facing farmers.

Pest and disease management: Researchers discussed the need for greater study of biological pest controls (e.g., the use of nematodes for slugs) and analysis of efficacy data for pesticides allowed in organic systems. Also required is a better understanding of the implementation and effectiveness of prevention techniques, including cultural methods like crop placement, mulching, rotation, crop covers, and irrigation scheduling. Slugs, mummy berry, spotted wing drosophila, voles, and gophers were mentioned as specific problems needing more organic solutions. Also needed are effective strategies to manage disease and insect complexes on diverse farms with multiple crops.

Weed management: Researchers pointed to the need for organic no-till systems for weed control and precision technologies for in-row weeding. Other priorities were how to more efficiently use labor for weed control and optimize conventional tillage equipment for conservation tillage.

Plant breeding: Researchers offered specific ideas related to breed and variety development, including development of conventional-organic hybrid models, basic research on organic-specific traits of plants (such as soil/rhizosphere-plant genotype interactions), breeding or updating heirloom tomato varieties, and improving field crop yields (especially soy and corn). In addition, tools used in conventional breeding/variety research could be applied to organic farming, such as association mapping using SNIP (single nucleotide polymorphism) panels and applying genomics and bioinformatics to organic plant breeding problems.⁵ Researchers also suggested that variety development and trials be guided both by farmer interest and by region. For example,

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⁵ This would not include GMO technology, prohibited under organic certification.

fire blight in pears is common in southern Oregon, where many conventional pears are grown but where there are no fire blight resistant pear varieties.



Harvesting eggplant at the OSU SOREC teaching farm. Central Point, Oregon.

Seed saving: Researchers also pointed out issues surrounding seed saving. For many organic farmers, it is desirable to produce seed of the varieties they use in production. Barriers to seed saving include using breeding technologies that prevent saving seed (e.g., F1 hybrids and cytoplasmic male sterility) and the lack of varieties with modern production and quality traits that have appropriate breeding systems (e.g., open pollinated or pure-line type varieties).

An important constraint for seed saving is the patenting of varieties, which places legal restrictions on saving seed. Additional constraints for farmers are the time and resources required to save seed that might otherwise be devoted to production. Specialized seed production knowledge is required to produce high-quality seed. Land and time must be allocated for planting and caring for the crop, maintaining purity, and harvesting and conditioning the seed.

The researchers noted that they can contribute to enhancing seed saving in several ways. First, they can develop improved varieties using breeding systems that facilitate seed saving. Second, breeders can release varieties with intellectual property requirements that do not constrain seed saving. Third, researchers can provide educational publications and workshops about seed saving.

Nutrient management: Researchers primarily discussed nutrient management as a subject for education rather than research. It was pointed out that while much is known about nitrogen, research is lacking on other nutrients and how best to manage them.

Other areas of research (beyond farm-level production): Researchers pointed out that farmers need more market research and market projections. The socioeconomic benefits related to local food and small farms need to be better understood. As one researcher asked, what is the payoff to society from public investment in local food and small farms? Similarly, what should public policy (state and federal legislation and regulations) look like to meet the needs of small or organic farmers or both?

Finally, some researchers raised complex, “big picture” questions about the long-term sustainability of intensive management on small organic farms. Specifically, they discussed how to deal with weed, pest, and nutrient management, while ensuring farms remain financially viable. Research questions included:

- What are the best crop rotation and intercropping options for farmers for weed and pest management and profitability?
- How much land, and under what rotation strategy, does a working farm need to sustain its soil and other biological resources while maintaining the same level of income over the long run?

- To continue to farm intensively with the same level of income over the long run, will small organic farms require proportionally more off-farm inputs, labor, energy, and/or other resources than larger organic farms?

What the researchers said about tools and education

The group suggested specific tools and training that could improve long-term farm performance, both in production and profitability. For example, farmers need education on nutrient management, the nitrogen cycle, and how to use cover crops to build soil instead of overusing manure. Information is lacking on the relationships—positive and negative—between soil health, productivity, and economic returns. Organic farmers, large and small, want to understand the meaning and cost/benefit of soil health measurements. They would also benefit from tools to support decision making (for example, on crop choices to mitigate risk and options for value-added production).

Farmers would benefit if scale-appropriate equipment were developed for specialized weed management. Similarly, equipment co-ops could be formed to purchase, maintain, and share equipment. Organizations like this could also facilitate group learning and the adoption of practices like conservation tillage.

On the business side, farmers need training in recordkeeping and guidance on health insurance and planning for retirement. They also need help answering basic resource allocation questions, such as: How small can a farm be and still make money? How big must a farm be for buying a machine harvester to make financial sense?

What the researchers said about information delivery

Researchers also discussed needed improvements in how the university delivers information to farmers. Existing websites, like Oregon Vegetables and OSU's online vegetable guides, are due for updates, and revisions should include principles of sustainable practices and management practices (e.g., pest control) appropriate for organic or small-scale production.

Beyond websites, farmers can benefit from networking tools and peer exchange groups to share knowledge and information with each other. Beginning farmer programs are useful, as are more intensive or advanced workshops on particular topics, such as training on pest management systems (e.g., degree-day models) and water management (e.g., evapotranspiration and soil depletion rates). Closer connections between farmers and researchers can also facilitate farm-specific problem solving. All of the researchers noted the value of replicating university research conducted at experiment stations on multiple, private farms.

The Southern Oregon Picture

The “big picture” suggests what is needed to enhance organic agriculture in Oregon. To learn what those needs look like on the ground and make the design and delivery of responses more relevant and effective, we asked similar questions at a regional level. For example, the statewide survey told us

On the business side, farmers need training in recordkeeping and guidance on health insurance and planning for retirement.

The key topics discussed by the focus groups related to: consumer base, skilled workforce, inputs, regulations and certifications, market access, research interests, educational needs, and new opportunities.

that “access to inputs” was a problem, but which inputs? In the regional focus groups, participants identified a lack of high quality livestock feed as a specific input that is not readily available. Similarly, the survey told us that weed control is a top challenge. In the focus groups, farmers asked for research on non-flame stale seedbed systems.

The status of certified organic farms in southern Oregon

The last official estimate in 2009 showed Jackson County with 27 certified organic farms, covering 2,518 acres, and Josephine County with 17 certified organic farms, covering 1,422 acres.⁶ Food system stakeholders (e.g., local retailers, farmers’ market managers, produce distributors) and farmers reported that organic agriculture in this area has rapidly increased in the last 5 years. While official data are not yet available for the past 2 years, from 2005 to 2009 there was a 26 percent increase in organic acreage and a 19 percent increase in the number of certified organic farms.

The focus group region

The first region we explored through focus groups can be described roughly as the Rogue River Valley in southwest Oregon. The area is part of the greater Rogue River basin and watershed; in terms of political boundaries, it is primarily Jackson and Josephine counties. It is a relatively small watershed that has become a recognizable foodshed, with defining agro-ecological opportunities and challenges. The region has well-defined natural boundaries, a long history of organic farming, and a significant number of newer farmers.

What the focus groups said

In the focus groups, farmers and food system stakeholders were asked to characterize the current state of organic agriculture in the region, discuss challenges they face, and suggest potential solutions and opportunities.

The key topics discussed by the focus groups related to: consumer base, skilled workforce, inputs, regulations and certifications, market access, research interests, educational needs, and new opportunities. All of the challenges and opportunities identified by the participants can inform future research, education, or organization efforts.

Farmers identified challenges related to all aspects of the food system: from land, inputs, tools, and labor to the supply chain carrying food from farm to plate; from regulations and certifications to farm economics (primarily operating costs) and markets (primarily current limits of consumer demand). Some of these are specific to organic farms; others are applicable to any small, local farm. Many challenges are scale-related. For example, regulations, equipment, processing infrastructure, and even the cost of organic certification can be

⁶http://csanr.wsu.edu/publications/techreports/Organic%20Stats/OR_Organic_Tables_2009.pdf. This is a known underestimate of current totals because (1) 3 years have passed, (2) a major organic food manufacturer, Amy’s Kitchen, moved to Medford in 2008, causing new farms to come on line, and (3) the estimate does not include data from all certifiers active in the region.

more accessible and affordable for large-scale farms. Because most organic farms in southern Oregon are located in areas with small valleys, most organic farms in the region are small (less than 20 acres). Farmers here have difficulty expanding their operations on their own, which is part of the reason focus group participants said it can be hard to make a living from farming.

Consumer base: Both farmers and food system stakeholders agreed that organic agriculture in the region is growing, with a “groundswell” of support for local agriculture. The number of farms is increasing, with a broad diversity of skills, crops, and educational and networking resources available for farmers. Over the past 5 years, the number of local farms selling through the primary retail food co-op in the area has doubled, and most of those farms are certified organic.

Yet sector growth raises concern, especially in a down economy, about competition and saturation in some market channels, such as farmers’ markets. The price spread between organic and conventional products remains a serious hurdle for expanding the customer base as does the price spread between local organic and large-scale organic from California. Local conventional retailers aren’t able to offer farmers a high enough price for farmers to make a living. Farmers also talked about a lack of education among local consumers about the benefits of organic or local food or both, which contributes to the limited consumer base.

Skilled workforce: Farmers said they needed a skilled, year-round workforce. They also noted that labor is expensive, and finding adequate, affordable housing for workers is difficult; local zoning is thought to be a barrier to setting up on-farm housing. The laws and regulations related to hiring farm interns were also not well understood.

Inputs: Good quality organic inputs are often expensive and difficult to find locally, if they are available at all. Examples given were livestock feed, compost, and supplies for organic hops. Farmers said they don’t use soil tests often enough because of the cost. Farm equipment at the right scale for specialized crops is expensive or unavailable. Processing and distribution are expensive and logistically difficult, especially for meat producers. Finding and affording liability insurance is also a challenge.

Regulations and certifications: Regulations were also a concern, especially regarding relatively recent changes in food safety requirements. One example is the 2010 Food Safety Modernization Act, the implications of which were not yet clear at the time of the focus group. Farmers also described challenges related to the rules, costs, and procedures of certification programs, some of which are voluntary but still necessary to stay in business (e.g., the leafy greens marketing agreement, Good Agricultural Practices—or GAP—certification).

Market access: Apart from the market-related challenges mentioned earlier (e.g., potential market saturation, price spread between organic and conventional products), stakeholders also noted that small farmers have trouble



Jennifer Lawson harvests basil at the OSU SOREC teaching farm. Central Point, Oregon.

Stakeholders also noted that small farmers have trouble accessing wholesale or other larger-volume market options.

accessing wholesale or other larger-volume market options. This is in part because they produce relatively small quantities of many different crops. Also, farmers and institutional customers don't understand each other's needs, and food safety requirements, as noted above, can be too difficult or expensive for small farmers.

Research interests: Farmers identified research topics they would like Oregon State University to address:

- Pest and disease issues—symphyllans in particular
- Stale seedbed management—other than flaming
- Supplemental feeds for animals on pasture
- Nutrient dynamics of overwintering livestock on pasture, especially within a hay rotation
- Mineral contribution to soil from cover crops
- Variety trials for high-margin crops

Farmers also asked for an economic analysis of farm viability in the region: What combination of farm size and crop leads to the greatest return on investment?

Educational needs: Farmers said they need more education on soils. They want to know what the different soil types in their region can and cannot do, and what various crops need. This information will help them improve their soil management practices, hone their use of amendments, and prevent “mining” the soil, which they are concerned some farmers in the region are doing.

New opportunities: Both farmers and food system stakeholders see supply- and demand-side opportunities. On the supply side, they see possibilities in aggregation:

- Farmers collaborating to reach a broader market through marketing cooperatives
- An equipment cooperative (e.g., based at the Oregon State University Southern Oregon Research and Extension Center)
- Consolidated warehousing and distribution
- Retail storefronts selling exclusively local, organic products

On the demand side, farmers and food system stakeholders believe that public education will help expand the consumer base, if education efforts focus on seasonal eating, farm-to-school initiatives, economic multiplier effects, and other benefits of local food.

Converging and Diverging Ideas and Priorities

We heard from farmers, researchers, and food system stakeholders at statewide and sub-regional scales. When we consider all of these voices in this conversation, we hear both similarities and differences. Areas of convergence between the groups provide general guidance; areas of divergence are

as important and perhaps more meaningful. In some cases, the divergence emerges because the groups have different immediate goals and time horizons.

Of the wide variety of topics discussed, three broad priorities emerged for farmers (at the state and sub-regional scales) and researchers:

- Weed management
- Insect pest management
- Nutrient management

That these three general categories rose to the top is not surprising given the challenges of managing organic production systems. Also, it is a result of the bias in our selection of researchers. Nearly all the researchers we interviewed are production-focused and therefore identified topics close to their areas of work as top priorities. Food system stakeholders did not focus on production but instead focused on larger-scale market and community dynamics.

The following four topics were priorities for farmers (at the state and sub-regional scales) and food system stakeholders, but not for researchers:

- Costs of production
- Marketing
- Access to inputs
- Farm labor

What do we learn from this divergence? Farmers and food system stakeholders were far more focused than researchers on market dynamics and challenges presented by increased competition and market channel saturation, not to mention the costs and constraints related to regulatory compliance. It is not surprising that these groups might list different priorities than researchers. They may share with researchers the overall goal of enhancing organic agriculture, but they operate on different timetables with different immediate goals.

Though most of the researchers we interviewed are aware of market dynamics and nonproduction-related challenges facing farmers, only one researcher interviewed specifically studies and provides education to farmers on markets and policy. This suggests that more policy and economic analysis would have value—from market and supply chain dynamics to specific questions about zoning that could allow on-farm housing for farm workers.

On the other hand, researchers raised research topics that could improve organic production (e.g., more effective pest management) and potentially help lower product cost and expand the customer base over time. Researchers also raised “big picture” questions, such as what factors influence the long-term viability of small-scale intensive farming, which might not be as immediate for farmers focused on their individual farms.

Finally, three other topics were discussed in the focus groups and by researchers but did not make the “top eight” list of barriers in the statewide survey:



Shaina Bronstein loads produce from the OSU SOREC teaching farm. Central Point, Oregon.

- Policy (specifically around food safety, worker housing, and regulations)
- Equipment (the need for scale-appropriate equipment and a mechanism to share it)
- Plant breeding (in general and regarding varieties for specific localities)
- Disease (e.g., fireblight and mummy berry, neither of which have organic controls)

The absence of policy from the statewide survey's "top eight," especially in light of how much it was discussed in the focus groups, may be the result of the survey mechanism. "Policy" is such a large and diffuse category that it may not resonate with farmers as part of a list on a statewide survey. Yet when farmers and stakeholders start talking about what they're doing and what's on their mind, policy-relevant topics, from federal laws to local zoning, are quickly on the table. We define these as "policy;" farmers and food system stakeholders define them as "problems."

Summary

This report combines different perspectives—farmers, researchers, and food system stakeholders across statewide and sub-regional scales—to shed light on what is needed to enhance organic agriculture in Oregon. Some recommendations are very specific, and others are classic challenges that need ongoing effort.

Though this needs assessment was initially designed to determine research needs related to in-field, on-farm production, we also identified priorities and research well beyond what is typically learned through university field station research. Market development, grower and consumer education, and policy development are just as important. If some markets for organic products are reaching saturation, how can new markets be developed? What new business structures, not to mention infrastructure, will be required?

The intent for future phases of this work is to include additional organic sector stakeholders with statewide perspectives and examine other sub-regions of Oregon. In addition, there is potential to expand the assessment by working with researchers in nearby states.

We hope that the challenges and recommendations in this report will stimulate research and action from researchers, educators, and policymakers in Oregon. Our research has started a compelling and complex conversation. Let's keep it going.