

Building Supportive Networks Among Agricultural Innovators Through a Symposium on Dryland Organic Farming

Abstract

Extension can play a valuable role by bringing together those who are pioneering innovative practices. We planned, built, and evaluated an Extension symposium on dryland organic agriculture. Post-symposium evaluations indicated that this process disseminated regionally relevant information; fostered networks among producers, researchers, and the organic processing and feed industries; enhanced trust among stakeholders; and increased interest in expanding organic production. Ninety-five percent of respondents indicated that they established new business relationships within 6 months of the symposium. A unique aspect of our project was the enhancement of social capital between geographically separated rural localities.

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Dryland Organic Farming in a Challenging Setting

The Inland Pacific Northwest (PNW), located east of the Cascade Mountains and west of the Rockies, encompasses some of the driest non-irrigated farmland in the world. This dryland farming area—spanning 9.2 million acres of Idaho, Oregon, and Washington—receives 6 to 24 inches of precipitation per year, most of which falls in winter and spring (Kok, Papendick, & Saxton, 2009; Schillinger & Papendick, 2008). The region produces high wheat yields due to its deep, fertile soils, retention of plant-available moisture, temperate growing conditions, and relatively stable precipitation (Granatstein, 1992).

Nevertheless, PNW growers, especially organic growers, face unique challenges in agricultural production due to steep topography and dry summers. Decades of intensive tillage and frequent fallow cycles have increased natural susceptibility to soil erosion by wind or water. Cool season crops—wheat, barley, pulses, alfalfa hay, and increasingly, *Brassica* oilseeds—are highly productive in the PNW. But the dry summers and short growing season limit the production of warm season species and thus the diversity of crop options. In addition, growers are vulnerable to market volatility because much of the region's soft white wheat is sold on the world market.

Under these conditions, many PNW farmers seek to improve the environmental sustainability and economic viability of their operations by alternative farming practices such as direct seeding or organic production. While many dryland farmers in this region are interested in transitioning to certified organic production, economic concerns (such as organic yields, markets, and pricing) and agronomic barriers (such as effective organic control of weeds, pests, and diseases) hamper adoption (Jones et al., 2006).

In this context, there is a clear need for Extension programs that provide practical knowledge about agronomic practices and marketing strategies for organic farmers in the PNW. In order to maximize impact from our program, we used a process similar to that outlined in Diem (2003): develop program goals on the basis of need; assess and obtain resources; identify priorities; determine specific objectives; conduct the program; evaluate impact in terms of changes in knowledge, attitude, and behavior; and report findings. The work we report on here is one component of a multi-year, iterative process in which innovative producers, researchers, and Extension educators exchange information (Kelsey, 2002; Peters, 2002) to improve the feasibility, profitability, and sustainability of organic dryland farming in the PNW.

Developing Goals for a PNW Extension Program on Dryland Organic Farming on the Basis of Need

To identify goals for such programming, we looked at recent agronomic and sociological studies, and we consulted stakeholders. As advocated by Nicholas and Hinckley (2011), we took care to engage stakeholders in a manner that fostered mutual respect by doing the following:

- Discussing goals and objectives early in the project process,
- Identifying appropriate times and modes of communicating, and
- Finding appropriate forums to disseminate information to the participating growers and larger agricultural community.

In the last decade, regional research and Extension programming in dryland organic farming has increased (Fuerst et al., 2009; Stephenson, Gwin, Powell, & Garrett, 2012), along with grower willingness to try new farming practices. Extension-sponsored meetings in Spokane, WA, in 1996, 2003, and 2004 attracted up to 100 growers from the tri-state region of WA, OR, and ID. Participants expressed a need for agronomic research and methodology that was relevant to organic production in the Inland PNW. In the early workshops, however, some local organic producers were reluctant to share information and business avenues with farmers whom they perceived as

competitors in a niche market (D. Roberts, personal communication, May 29, 2013).

Two surveys, one of Washington organic producers and one of Washington wheat growers, provided information about the need for a regional organic conference. In one survey, to which 52% of 1,067 conventional dryland wheat producers in Washington responded, 14% of respondents had considered transitioning some of their acreage to certified organic but needed additional information and/or assistance (Jones et al., 2006). The second survey was sent to the 684 certified organic producers in Washington, 56% of whom responded (Goldberger, 2008). Respondents to both rated conferences highly as a potential source of information about organic production and marketing. Over 80% of responding certified organic producers expressed interest in collaborating with WSU scientists and Extension educators on organic agricultural research. These surveys demonstrated farmer interest in organic production but indicated that adoption of organic farming is stymied by lack of relevant information. This need for additional information echoes a refrain reported in other parts of the United States (Agunga & Igodan, 2007; Lillard & Lindner, 2012; Middendorf, 2007).

The early discussions led to the formation of two on-farm organic research programs at Washington State University (WSU) during 2002 and 2003. Both programs added to our understanding of cropping systems and conservation tillage practices appropriate for organic farmers. One, the Boyd Project near Pullman, WA, grew into a 10-year comparative study of cropping systems for transitioning to organic farming (Borrelli et al., 2012; Gallagher et al., 2010). The other, at the WSU Conservation Farm, also near Pullman, integrated low-disturbance tillage into innovative organic crop rotations, intercropping, and other cropping systems (D. Huggins, personal communication, February 11, 2013). These research efforts were also informed by extensive personal interactions between PNW dryland organic producers and land-grant university affiliates. From 2009-2010, 12 growers representing our tri-state region participated in advisory panels that discussed the priority needs of producers and potential benefits of a symposium. In Washington, each farm run by an advisory panel member was visited by a WSU faculty member at least once. These long-term research projects became focal points for many Extension activities, including field days, presentations, and farm visits for researchers, producers, industry representatives, and university students.

Our immediate and short-term Extension programming goals were to increase knowledge and openness toward organic farming by fostering interactions and sharing research- and experience-based information among producers, industry representatives, and land-grant institutions. Our intermediate and long-term goal was to stimulate behavioral change resulting in improved economic and environmental sustainability of organic cropping systems in PNW drylands. Funds for this research and related Extension programming came from private donations as well as state and federal grants.

At a January 2010 meeting of the Boyd Project advisory panel, regional organic grain growers stressed the need for a dryland-specific organic farming conference or symposium to address concerns about profitability, marketing, weed control, and other challenges.

Using Stakeholder Input to Identify Priorities

As part of the planning process for such an Extension event, we again turned to stakeholders, this

time for input about symposium goals, timing, and appropriate fees (Lanyon, 1994; King & Rollins, 1999). At a meeting of the Boyd Project advisory panel in January 2011, the following topics, in order of priority, were identified:

1. Cooperative and direct marketing,
2. Weed management,
3. Dryland organic agroecosystem design,
4. Soil management,
5. Organic transition and certification,
6. Organic pest and disease control, and
7. On-farm research design.

Determining Objectives

In order to address these needs and priorities, a team of researchers, Extension educators, and graduate students from WSU, the University of Idaho, and Oregon State University developed a symposium. The team obtained funds for a 1-day event with the following objectives:

1. Learn from stakeholders about what practices have or have not been successful in dryland organic farming and what problems still need to be addressed,
2. Disseminate up-to-date information about recent successes in dryland organic research and practice to growers currently using organic techniques or interested in transitioning to organic farming, and
3. Foster networks that bring together people with similar values and goals in order to encourage, support, and validate their efforts to improve the sustainability and viability of farming in drylands of the PNW.

The Symposium: Addressing Marketing and Agronomic Constraints

Our team hosted the symposium Dryland Organic Agriculture in the PNW: Meeting Opportunities and Challenges on November 11, 2011, in Yakima, WA. This 1-day symposium was held in conjunction with the annual meeting of Tilth Producers of Washington, a statewide organization devoted to sustainable farming. The symposium was publicized to appropriate regional contacts through fliers, email lists, and press releases.

Our intention was to inspire as well as to inform our target audience: producers, representatives of agricultural businesses, students, and Extension/university personnel. We anticipated that the

learning and networking that took place at the symposium would result in behavioral changes, ultimately leading to increases in the acreage, number, and sustainability of organic dryland farms in the PNW.

Bob Quinn, an internationally recognized organic farmer, entrepreneur, and scientist from Big Sandy, MT, gave the keynote address. Most of the symposium speakers were PNW organic producers who had developed innovative and successful farming and marketing operations for their products. A morning session on Finding and Building New Marketing Channels featured speakers representing a variety of business models. This was followed by an afternoon session discussing the agronomy of dryland organic production. The program, including presentations on the Boyd Project long-term organic cropping system study, included reports on research funded through the USDA's Organic Agriculture Research and Extension Initiative. The conference ended with a panel discussion in which three organic growers presented their successful farming systems.

In order to enable producers and potential buyers of organic grains to meet and begin building business relationships, we held two networking sessions, using an approach analogous to speed dating (Lev, 2003). Eight major purchasers of organic dryland crops, including wheat, chickpeas, oats, other feed grains, or hay, sent representatives to explain their companies' needs and to meet organic producers.

Most of the symposium talks were videotaped and are available at

<http://www.extension.org/pages/61391/dryland-organic-agriculture-symposium-from-the-washington-tilth-conference-2011>.

Evaluating Changes in Knowledge, Attitudes, and Behavior

To evaluate the impacts of our symposium, we followed, with slight modifications, the method of Radhakrishna and Relado (2009) for linking evaluation questions to program outcomes (Table 1). We used two methods, written surveys and a dot poster, to evaluate the symposium's impact.

Table 1.
Examples of Questions Used in Symposium Evaluation Surveys

Type of question	Information provided	Examples of questions
<i>Process</i>	Did program reach intended audience?	Tell us about yourself (vocation, education, access to Internet, area of residence, age, gender [optional]; for producers: size of farm, acreage in certified organic production).
	Did program include an appropriate mix of activities?	Which part of each session was MOST interesting or useful?
		Which part of each session was LEAST interesting or useful?

		Did you make new connections? (If so, how many?)
		What ideas would you like to read or hear about in MORE depth?
		How could each session be improved?
<i>Outcomes</i>	What immediate and short-term changes in knowledge, attitudes, and behavior have taken place?	Indicate your knowledge level BEFORE each symposium session.
		Indicate your knowledge level AFTER each symposium session.
		If you gained information from the symposium, which ideas do you use?
		Have you used your connections? (How many?)
	What intermediate and long-term changes are likely to result from the program?	If you gained information from the symposium, which ideas do you plan to use in the future?
		Do you plan to use connections you made at the symposium in the future?
		Do you plan to convert acreage to certified organic in the next 5 years?
		What are your top needs in order to improve the economic, environmental, or social sustainability of your farm or business?

The first survey, administered on the day of the symposium, was a 32-question document available to attendees throughout the day. Six months later, a follow-up 40-question survey was conducted with the Web-based program Survey Monkey (<http://www.surveymonkey.com>). This survey was sent to the 74 attendees for whom we had email addresses. Attendees were sent three email requests to participate in the survey. Each evaluation contained questions in five categories:

- Business and marketing strategies,
- Dryland organic methods,
- Networking,
- Opportunities and challenges, and

- Biographical information.

The evaluations contained two types of multiple choice questions (single or multiple responses allowed), as well as open-ended questions.

Twenty-six of 84 attendees (31%) turned in evaluations the day of the symposium, and 24 of 74 (32%) of the online follow-up surveys were returned. Not all respondents answered all questions, so results for each question indicate percentage responses among those respondents who answered that question.

Throughout the symposium, a poster near the exit invited participants to vote with dot stickers on priorities for research and learning in sustainable dryland systems (Lev & Stephenson, 1999). Participants could place an unlimited number of dot stickers next to printed answers, write additional responses on lines marked "Other," and/or answer two open-ended questions about key challenges. Stickers were color-coded to differentiate responses by producers, university affiliates, or industry representatives.

Results

Process

We learned from stakeholders (thus fulfilling our first objective) in the process of organizing this symposium as well as during its presentation. This symposium brought together diverse interested parties who shared knowledge and identified current and future needs. Producers who responded to the surveys had between 1 and 60 years of experience and farmed from 0.1 to 10,000 acres.

In both surveys, the topics that respondents wanted to know more about were echoed as the topics they had found most interesting at the symposium. This suggests that the dissemination of up-to-date information (our second objective) was achieved at the symposium but should be viewed as the first step in an ongoing, iterative exchange of knowledge. Crop rotations, cover crops, weed control, the economics of transitioning to organic farming, networking, ongoing research, the "nuts and bolts" of successful dryland organic operations, and building relationships between producers and their customers were repeatedly mentioned in open-ended survey questions. Producers were interested in applying these ideas, while other professionals planned to use this information in planning research and Extension programs or in their businesses. These findings indicated that we addressed the audience's needs with our mix of presentations, panels, and networking sessions. One succinct response stated: "part info/part inspiration is great" (underlining in original).

Outcomes

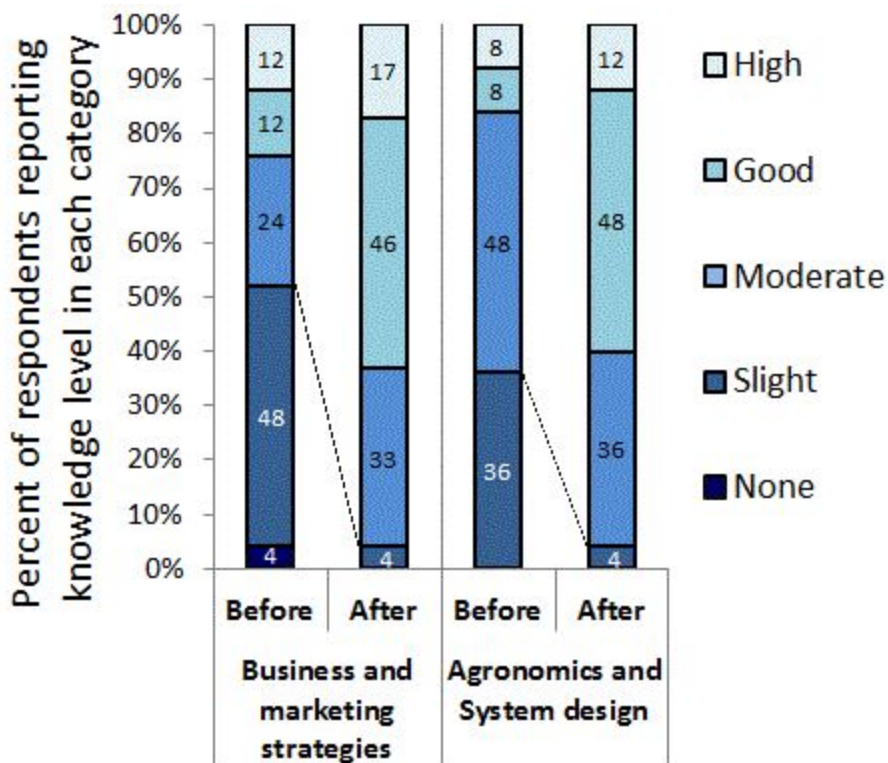
Knowledge

Most respondents reported a significant increase in knowledge from the symposium sessions. After each session, 96% of respondents reported moderate, good, or high levels of knowledge, and the proportions of respondents reporting slight or no knowledge decreased. This is shown in Figure 1, in which the column segments representing percentages of respondents reporting moderate, good, or

high levels of knowledge (heights above the dotted lines) expanded after each session. These results are further evidence that we accomplished our second objective: increasing participants' knowledge of current information about dryland organic marketing and farming practices.

Figure 1.

Self-Assessed Changes in Knowledge Level Reported by Symposium Respondents to Survey on Day of Symposium



Attitudes

Survey respondents frequently indicated that the sharing of information with other successful organic producers was the most useful part of the event, a marked change in attitudes from what participants stated in earlier meetings, in which growers often viewed each other as competitors! The keynote speaker and the members of the producer and marketer panels were all mentioned as being especially informative. In the words of one member of the audience, "having perspectives of growers on how they fit into the larger picture" was the most useful part of the marketing session.

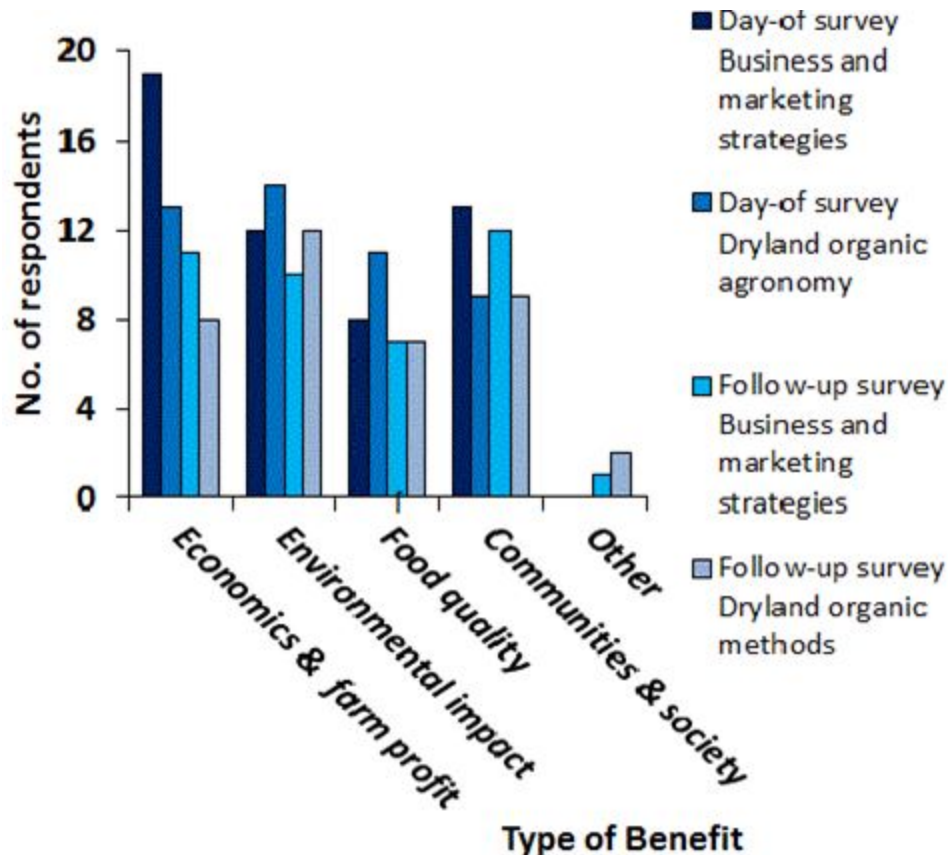
The importance of integrity in interpersonal and business relationships involved in getting products from producer to consumer was a recurring theme. Many speakers addressed this directly, and poster and survey respondents frequently cited trust as essential in relationships between growers and their customers and in interactions among members of farm cooperatives. Comments about "transparent and honest" business relationships, "belief in what you do," "collaborative action," "cooperative partnerships," "integrity," "connecting with buyer[s]," "build[ing] trust," be[ing] honest," and the importance of "being open minded and fair" were common. These remarks emphasize the importance of social capital (Civittolo & Davis, 2011; Woolcock 1998), an important aspect of rural

development (Cartwright & Gallagher, 2002).

Many respondents felt that implementing ideas and methods from the symposium in their own operations would have economic, environmental, health, or social benefits (Figure 2). Most respondents, both at and after the symposium, selected more than one category in which they expected gains.

Figure 2.

Responses to Questions About Types of Benefits Likely to Result if Survey Respondents Used Information Gained at the Dryland Organic Symposium



Behavior

Data from the surveys show that we successfully implemented our third objective: fostering networks to encourage, support, and validate participants' efforts. On both the day-of and the follow-up surveys, most respondents indicated that they made connections at the symposium (86% and 95% of 22 and 20 respondents, respectively). By the time of the follow-up survey, respondents had made between one and more than 10 new connections. Most of these were either among producers or between producers and students, university faculty, government personnel, or industry representatives. Six months after the symposium, 50% and 64% of respondents to questions about using new connections reported that they had already used information or connections they had gained at the symposium relating to business strategies or dryland organic farming methods, respectively.

Both the dot poster and survey responses reflected considerable interest in increasing organic farming in the PNW drylands, and several respondents indicated that they plan to transition land to certified organic production within the next 5 years. In addition, on the day-of survey, respondents who planned to use information from the symposium were asked which ideas they intended to use. Seven (39%) of 18 respondents for the marketing session mentioned building relationships among producers as well as between producers and their customers. For the session on dryland organic methods, each of the following were cited as important ideas by at least 11 (58%) of 19 respondents: rotations, fertility management, and weed management.

However, changes in knowledge and attitudes do not always translate into changes in behavior (Dietz & Abraham, 2011; Dietz, Clausen, & Filchak, 2004; Kollmuss & Agyeman, 2002; Taylor, Curnow, Fletcher, & Lewis, 2007). There are many obstacles to changing behavior, including that innovators often face ridicule and social isolation because of their unconventional practices. This is especially true in the dryland PNW, where population density is low and commercial organic farming is still relatively new. Farmers at our symposium expressed concern about being marginalized in their communities. One producer identified "ridicule from the neighbors over a weedy field" as one of the biggest challenges to organic farming in his county, and two respondents cited social factors as the major impediment to achieving sustainability in their farm or business.

The surveys and dot poster shed light on specific constraints that can discourage farmers from moving in new directions. Concerns about finding effective and economic crop rotations and organic weed control techniques, as well as about connecting with buyers, were frequently expressed.

We found that respondents appreciated the opportunity to learn about what others were doing and that this exchange of information helped address perceived barriers to dryland organic farming. One respondent wrote: "There is more information out there than I was [led] to believe. And there are solutions to most of the foreseen problems." Another appreciated the way the event brought together all aspects of the farm-to-table process, the way "it was all interconnected." A supplier wrote "[I] now know issues faced by growers and can be sensitive to their needs," and an organic certification specialist noted that "the information I received . . . was very helpful to gain insight to the manag[e]ment of the dryland farming and to better my understanding of our customers['] struggles and needs." Others appreciated the integration of research and practical experience.

Conclusions

Through our evaluation process, we found that the dryland organic agriculture symposium achieved our immediate and short-term goals of increasing knowledge and openness toward organic farming in the PNW by sharing information and facilitating interactions among interested parties. In addition, the event promoted our intermediate and long-term goal of stimulating behavioral change aimed at improving the sustainability of organic farming in this region. Although feedback from the dot posters and surveys indicated that we accomplished our objectives, the survey response rate was lower than desired. Audience members deferred filling out the first survey until they had heard all presentations, by which time many were ready to leave. The second survey was sent out in May, a busy time for most PNW dryland farmers. In future programs of this kind, we will avoid these pitfalls.

We found that although there is considerable interest in transitioning to organic production in the PNW, agronomic, economic, and social challenges to organic farming remain. Nevertheless, successful dryland organic farming operations are being run by highly innovative farmers. This symposium shed light on hurdles that inhibit increasing certified organic acreage in the dryland PNW. The event also addressed many of these hurdles by engaging pioneering farmers who are using current knowledge to guide their adoption of innovative practices, researchers who are contributing additional knowledge of best practices, and producers who would like to convert to organic production. Our process of engaging stakeholders throughout the planning process led to an event that validated the work of emerging but geographically isolated dryland organic farmers.

Enhancing social capital between separate rural localities was essential to these outcomes. By facilitating face-to-face interactions among stakeholders, the symposium afforded opportunities for innovative farmers, purchasers, and research and Extension personnel to support and learn from each other. This event also created a sense of community and provided a mechanism that will allow these multi-dimensional information exchanges to continue so that otherwise isolated stakeholders will have the tools to adapt to changing environmental and economic circumstances.

We recommend that in situations where new technologies in sustainable agriculture are being implemented, Extension personnel should develop programs that enhance opportunities for producers, buyers, academics, and novices to share information by forming mutually supportive, ongoing connections.

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