



ORGANIC AGRICULTURE

Supporting the wider adoption of organic certification for Indiana grain farmers

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Crop farmers who transition to certified organic grains report higher per-acre returns and enhanced economic stability (McBride et al., 2015; Greene et al., 2017; Organic Trade Association, 2018). Organic production practices also support farmers' ability to manage excess nutrients, promote biological nitrogen fixation, support biodiversity, eliminate pesticide run-off and increase carbon sequestration by building organic matter in the soil (Gomiero et al., 2011). Organically grown crops also perform better in both drought and excessive rain conditions (Scialabba & Muller-Lindenlauf, 2010), which is important because heavy rain events and more unpredictable precipitation are projected to increasingly challenge Indiana crop farmers (Bowling et al., 2018). Despite these benefits, certified organic land accounts for less than 2% of U.S. farmland, and around 1% in Indiana (U.S. Agricultural Census, 2017).

Certified organic grain is highly sought-after. Consumer demand for organic products has grown rapidly since the

1990s, and demand continues to outpace domestic supply by a large margin (Organic Trade Association, 2016; Greene et al., 2009). In 2018, the U.S. organic market set a record with \$52.5 billion in total organic sales, including grain sales, at a growth rate that continues to outpace the general market (Organic Trade Association, 2018). A USDA analysis of organic grain costs and returns between 2011 and 2014 found that despite higher production costs, the organic premium makes certified organic corn and soybeans more profitable (Greene et al., 2009). Crop farmers in Indiana have an opportunity to improve profitability, take advantage of a high-demand market, and reduce the environmental impact of agriculture through organic certification.

This report presents findings from a research and education study that was funded by the North Central Sustainable Agriculture Research and Education program of the USDA

(NCR-SARE). The project was designed to facilitate Indiana farmers' access to the organic grain market by identifying major barriers to certification, and inform education and outreach activities to support farmers considering certification. The study included a survey and interviews of Indiana grain farmers to identify the most salient barriers and facilitators to organic certification. We distributed 1,100 surveys and received completed and usable surveys from 383 participants (34.8% response rate); 95 farmed conventionally, 90 were in the process of transitioning some or all of their acres to organic, and 198 farmers reported all of the acres they farmed as certified organic. In this analysis, we have divided farmers into two groups: 95 who exclusively farm conventionally and 288 who were some combination of conventional, transitioning and certified organic. In addition, we conducted 30 phone interviews with conventional, transitioning and organic farmers. In this report we present findings from the survey as well as insights gathered from the interviews.

Perceived obstacles

Overall, our survey results confirm previous research findings from other regions on a number of barriers to organic certification, and provide several new insights that clarify priorities for extension and outreach programs in addition to future research.

We found significant differences in farmers' perceptions about the obstacles to pursuing organic certification. In the figure below, we present the different mean scores for a series of Likert-style survey questions (on a 1-4 scale) asking farmers to rate the degree to which they think each item is an obstacle to organic certification (**Figure 1**). In general, the results suggest that farmers who have transitioned to organic production systems do not experience these obstacles to the degree that they are perceived by farmers who have not transitioned. The most difficult problems for organic and transitioning farmers are production loss from weed pressure, GMO drift that can contaminate their crops and make them ineligible for certification, and crop damage and contamination from pesticide

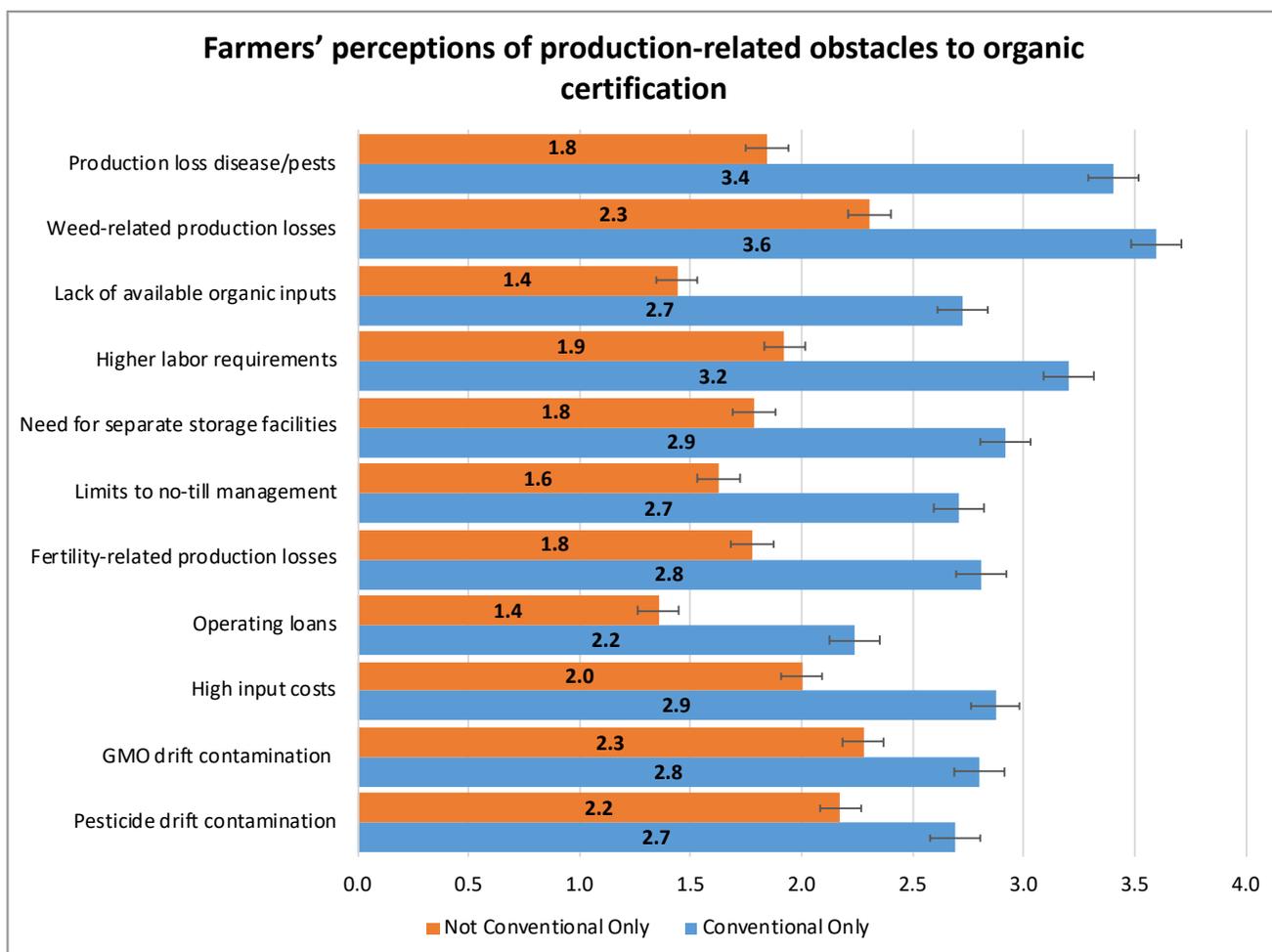


Figure 1. Mean scores for Likert-style survey questions (1-4 scale) in which conventional / non-conventional farmers rated each item as a production-related obstacle (1-none, 4-major)

drift. For farmers who farm only conventionally, the greatest perceived obstacles are production losses from weeds, diseases and pests, as well as the higher labor requirements.



An organic crop field with poor weed management. Photo by Michael O'Donnell

We also asked farmers about their perceptions of market-related obstacles to organic certification. In the figure below, we present the different mean scores for a series of Likert-style questions (on a 1-4 scale) asking farmers to rate the degree to which they think each item is an obstacle to organic certification. Between farmers who are conventional only and those who are transitioning or have some or all acres certified organic, there are significant differences in perceptions of market-related obstacles (**Figure 2**).

Again, responses were highly correlated with the production systems farmers were currently using, with one exception: both conventional and organic and/or transitioning farmers consider competition from organic imports as one of the most important barriers. Interestingly, conventional farmers tend to think finding a reliable buyer for organic grains is much more of a barrier than organic and transitioning farmers do. This suggests that organic market opportunities may be better than conventional farmers perceive them to be. Likewise, conventional farmers tend to think organic markets are oversupplied, which is inconsistent with the reality that there are significant shortfalls in the supply of organic grains in the U.S. Furthermore, organic and transitioning farmers were much less likely to report that they think organic markets are oversupplied. Conventional-only farmers also reported uncertainty about obtaining organic price premiums and the future of organic markets, as well as the distance to available markets. This suggests a need for outreach and education on the available markets for certified organic grains and identifying reliable buyers of organic grains. In addition, the findings suggest a need for extension and outreach focused on demystifying the process of obtaining organic certification, the process for

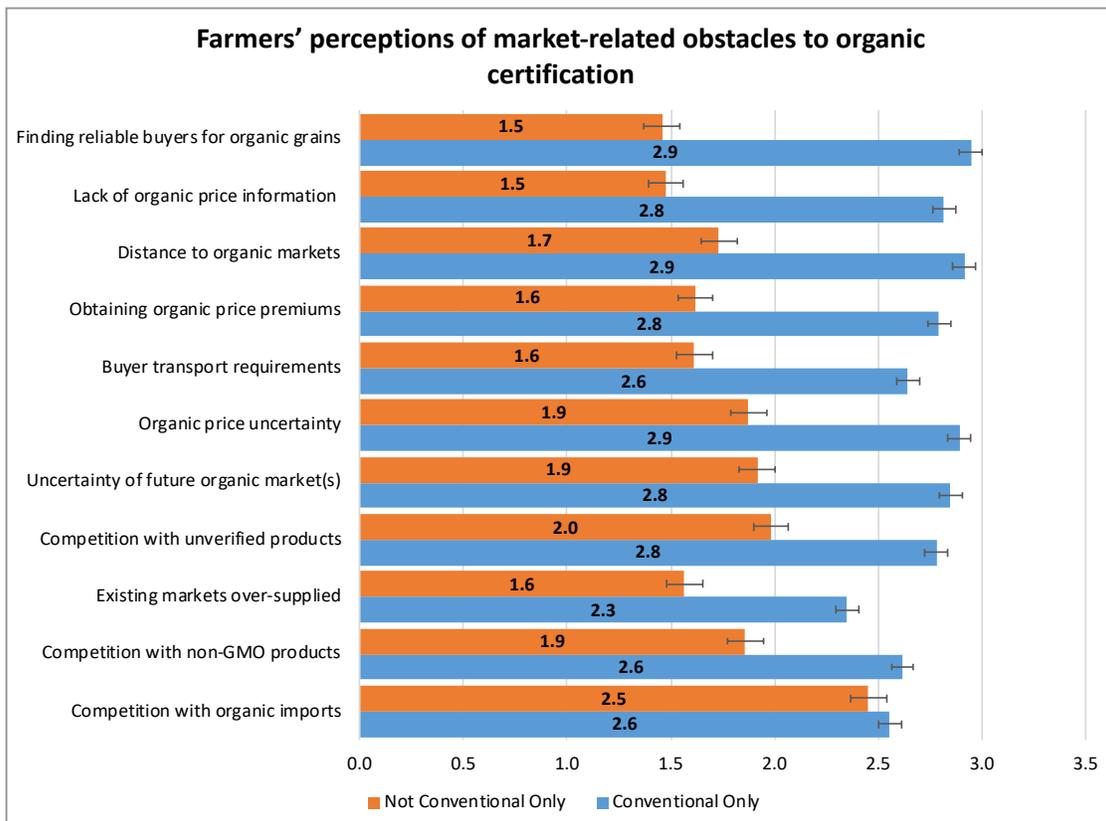


Figure 2. Mean scores for Likert-style survey questions (1-4 scale) in which conventional / non-conventional farmers rated each item as a market-related obstacle (1-none, 4-major)

receiving the organic price premium and finding organic grain pricing information and meeting certified organic grain transport requirements.

Perceived opportunities

In general, farmers report higher or lower agreement (on a 1-5 scale with 1 being strongly disagree and 5 being strongly agree) to statements about the opportunities and benefits of organic production depending on whether they are conventional-only or a combination of organic and/or transitioning farmers (**Figure 3**). All types of farmers recognize that there are higher price premiums for certified organic grains and that there is consumer demand for organically grown grain products. The survey findings also demonstrate that some of the most important motivations for transitioning to organic production were perceptions that organic systems are better for their health, better for the environment, provide a more intellectually interesting or challenging approach to farming,

and offer a way of increasing economic returns on fewer acres. In contrast, conventional farmers are significantly less likely to regard certification as an opportunity to improve their economic viability or the quality of their crops. There was greater agreement among organic, transitioning and conventional farmers about whether organic certification offered lower input costs. All groups rated this statement relatively low, indicating that organic production systems do not inherently result in lower input costs¹. This finding suggests an opportunity for further research and extension support, to aggregate information on approved inputs for certified organic production and consider options for purchasing arrangements that could lower input costs² for farmers transitioning to organic production. In addition, there is a need for research and extension focused on the performance of inputs in organic production systems, including impacts on yield and profitability.

Opportunities for extension and outreach

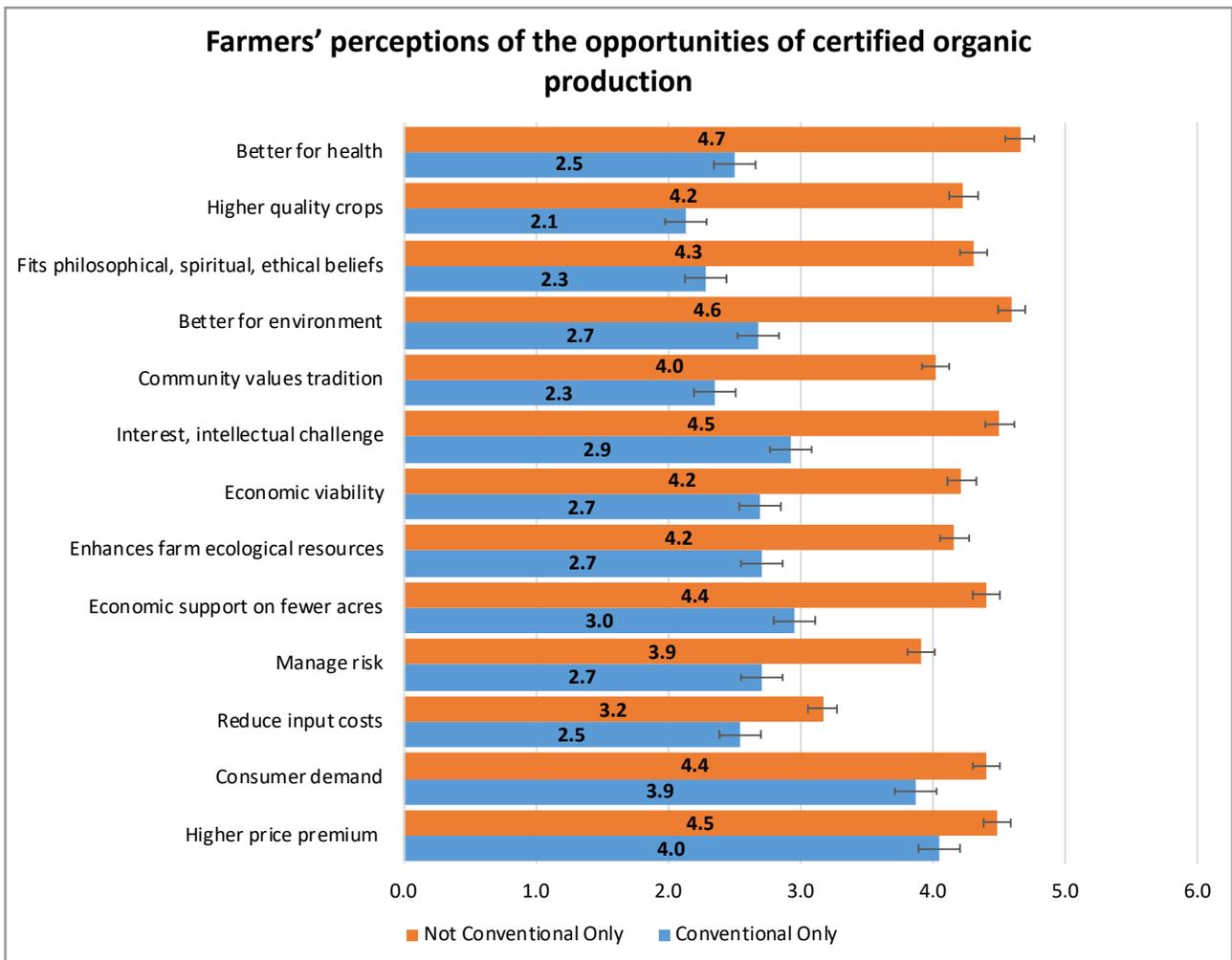


Figure 3. Mean scores on a 1-5 scale in which conventional / non-conventional farmers rated each item as an opportunity that comes with certified organic production (1-low, 5-high)

In this section we report on insights gained from the survey as well as 30 interviews with Indiana grain farmers, including 10 conventional farmers (some are not interested in organic certification and some are), 10 farmers who are in the process of transitioning to organic, and 10 farmers who are certified organic.

Lack of successful farmers who can serve as models and mentors

One important obstacle that was reported in the interviews with conventional farmers is the lack of successful organic farmers in their area. Many farmers described having no farmers they know of who use organic practices, or described an unsuccessful organic farmer in their area who has poor-looking crops and may lack effective weed control or perhaps operates on a very small scale that would not support a livelihood. These perceptions play an important role in deterring conventional farmers from considering organic certification. For example, poor appearance and lots of weeds is something farmers work hard to avoid.

The limited numbers of non-Amish successful organic farmers in Indiana has important implications because conventional farmers don't have a mental model of what organic farming can look like, and therefore cannot imagine that it could work for them.

Furthermore, nonprofit program managers of farmer mentoring programs that serve Indiana report that they have many applicants from Indiana. However, they can't find enough mentors and often must pair Indiana mentees with out-of-state mentors (personal communication, n.d). Likewise, transitioning farmers report looking across state lines to find experienced farmers to emulate (personal communication, n.d). Farmers interested in transitioning do not have the opportunity to talk with and learn from an experienced, successful organic farmer. Our survey data indicates that all types of farmers (conventional, organic, and transitioning) consider the opportunity to visit other farms and talk to other farmers about their practices as an important means of gaining knowledge and making decisions (**Figure 4**). Furthermore, conventional farmers, more so than organic and transitioning farmers, said that they consider themselves to be role models for other farmers. This might be because many of the organic and transitioning farmers in our study are still developing their organic systems. Our survey shows that the majority of organic grain farms in Indiana are operated by Amish farmers. Having few successful models and mentors is an important barrier for non-Amish farmers who are interested in transitioning in Indiana.

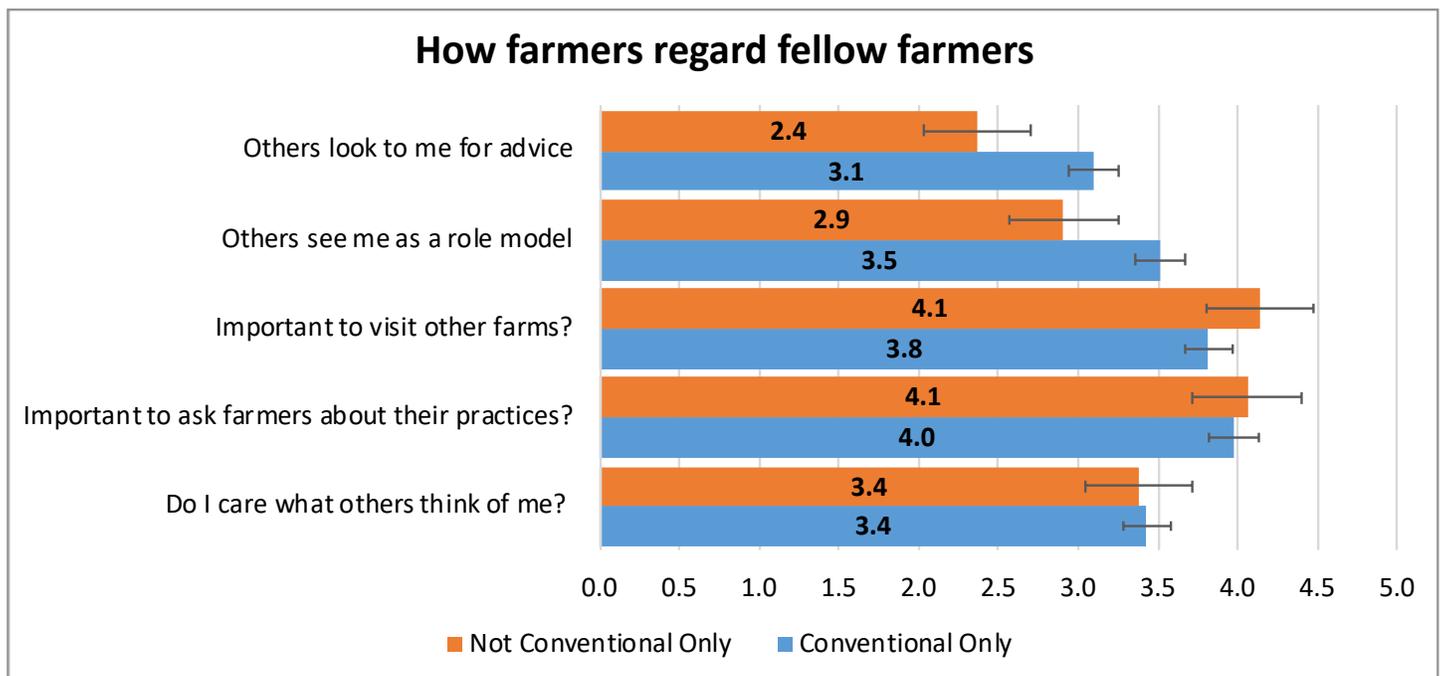


Figure 4. Mean scores on a 1-5 scale in which conventional / non-conventional farmers rated each item, by level of importance, in how they regard fellow farmers (1-low, 5-high)

¹ The survey question was worded as a statement: "Organic farming reduces input costs" with a Likert scale asking respondents to agree or disagree with the statement.

² The survey asked about input costs separately from labor costs.

Recommendation:

Previous research has shown that the spatial proximity of other successful farmers is an important catalyst for the transition to organic certification (Taus, et al., 2013). Given the low numbers of successful organic farmers in Indiana, particularly those who are not Amish, conventional farmers interested in transitioning need greater support to identify available mentors and role models. Investment in extension support for the small number of farmers who are organic or transitioning could make a big difference in whether they are successful and can later serve as models and mentors for other farmers who are interested in learning from their experiences. Our survey shows that there has been a small surge of conventional grain farmers who are transitioning some of their acreage into organic production in Indiana. These novice organic farmers provide an important opportunity for investment in extension support and outreach to ensure they have access to the assistance and resources that they need to be successful. Providing incentives and support for conventional farmers who are transitioning to share their knowledge and serve as mentors to other farmers could have a substantial impact over time.

Our findings also provide insights into the kind of outreach and education programs that could have the greatest impact. All types of farmers consider it very important to learn from other farmers (**Figure 4**), suggesting that a farmer-based networking approach will be most successful for outreach and education programs. This finding is consistent with the 2016 study conducted by Oregon State University and Oregon Tilth on organic transition (Stephenson et al., 2016).

Incompatibility with no-till systems

Another important insight gained from conversations with Indiana farmers is that conventional farmers who are conservation-oriented are often invested in



Farmers and other agricultural professionals gather at an organic grain field day in northwest Indiana. Photo by Michael O'Donnell

no-till production systems, which are relatively widely adopted in Indiana (Reimer, Thompson & Prokopy, 2012). Therefore, most farmers who are interested in conservation and are open to experimenting with new production practices are already invested in no-till systems. Some farmers perceive no-till management as potentially incompatible with organic production systems.

No-till systems rely on herbicide applications and equipment that facilitates planting into fields that have not been tilled. Furthermore, no-till systems reduce labor requirements, while organic production systems generally require an increase in labor. Farmers using no-till practices may have adjusted their equipment, labor capacity and management systems accordingly over time; therefore, increasing their labor and management can pose an additional challenge for transitioning to organic certification. In addition, organic practices may appear to farmers using no-till systems as going backward and being less sustainable, given the increased tillage and labor requirements. However, no-till farmers are successfully transitioning acreage into organic production. Some are looking to innovate and translate no-till and minimal tillage systems into organics, despite the challenges, or looking at ways to offset the potential damage of increased soil disturbance from tillage and cultivation with more diverse crop rotations, increased cover cropping, integrated livestock grazing, and use of perennial crops such as alfalfa and hay in their crop rotation.

Recommendation:

Field research on improving the compatibility of no-till systems with organic production systems is an important area of opportunity. New technology



A roller crimper is used to mechanically terminate annual cover crops to suppress weeds in organic no-till production systems. Photo by Michael O'Donnell

and innovations, such as roller crimpers, are under development and require greater research support. Increasing investment in research on no-till and minimum or reduced tillage organic production systems is critical. In addition, extension educators can work with farmers experimenting with organic no-till and minimum or reduced tillage methods to develop a body of working knowledge and community of practice to improve on existing innovations. Long-term organic cropping system trials should be implemented in Indiana to explore the impacts of different organic crop rotations on soil health and quality parameters, such as soil organic matter, bulk density, pest incidence and water infiltration.

Lack of agronomic support and information for organic practices and certification

Our study finds that transitioning and organic farmers report greater reliance on organic certifying organizations such as Ecocert ICO, and particularly on farmer-based nonprofits, including the Ohio Ecological Food & Farm Association (OEFFA) and the Midwest Organic Sustainable Education Service (MOSES) for information that influences their farm management decisions. This finding suggests that grassroots organizations are providing information and services for organic certification that farmers could not obtain from conventional service providers. In

contrast, farmers who use only conventional practices are more influenced by their landlords and service providers, including crop consultants or advisors, farm input dealers, lenders and insurance agents, and, to a lesser extent, the Farm Service Agency (FSA), Natural Resources Conservation Service (NRCS), University Extension, the State Department of Agriculture, and farm organizations, such as the Farm Bureau. This finding is consistent with another Indiana-based study that showed farmers are most influenced by service providers, such as crop consultants and farm input suppliers, and consultants (Stalker Prokopy, L. and J. Ulrich-Schad, 2014). This implies that if the agencies and consultants, which conventional farmers rely on for information, do not view organic certification as a viable option or do not have the organic production experience and knowledge to advise their clients on organic production systems, then that view and lack of information will influence conventional farmers' perceptions of organic certification (**Figure 5**).

Recommendation:

These findings indicate that extension and outreach specialists should partner with and support farmers who are currently transitioning and those who already manage certified organic cropland. All types of farmers consider family members and other farmers as the most influential source of information for making farm management decisions. In addition, it will be important

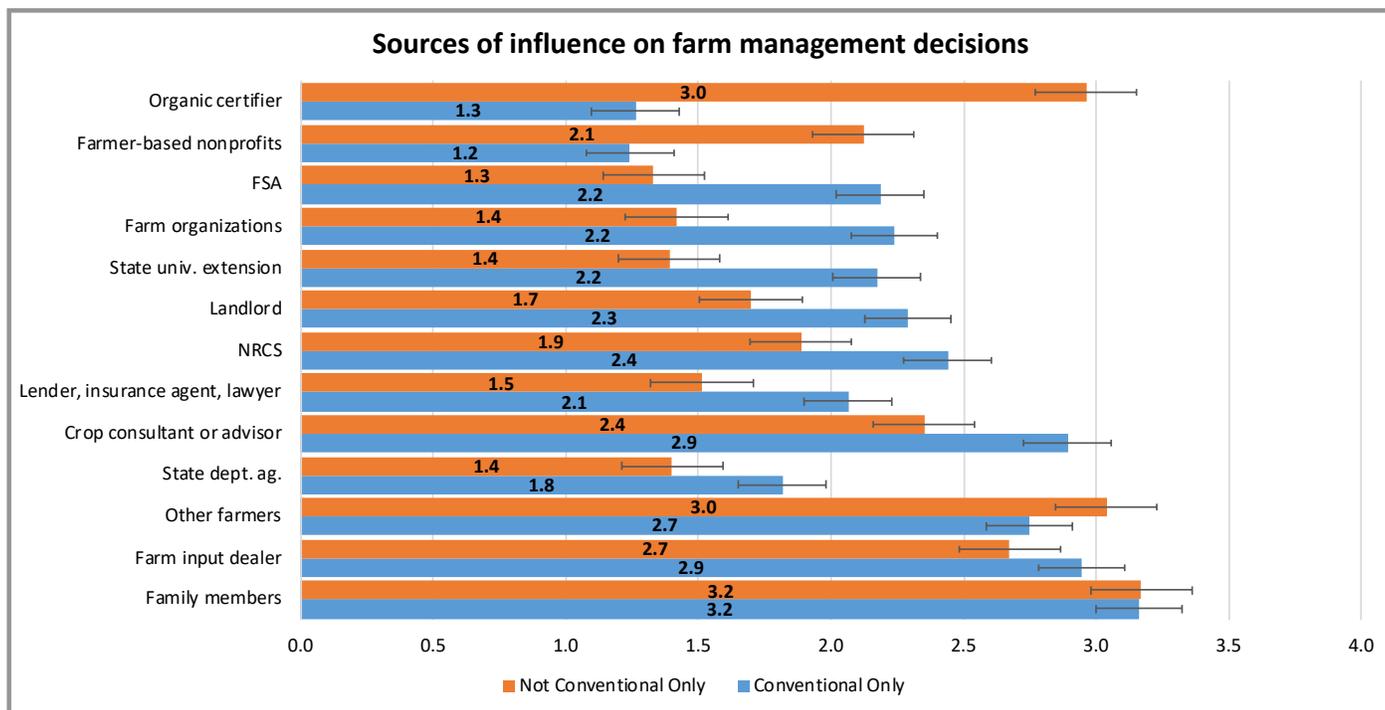


Figure 5. Mean scores for Likert-style survey questions (1-4 scale) in which conventional / non-conventional farmers rated each item's influence on farm-management decisions (1-low, 4-major)

to partner with organic certifiers and farmer-based nonprofits that provide services and support for organic farmers. Our findings suggest that farmer-based nonprofit organizations and organic certifiers are currently playing an important role in providing agronomic advice, information and support on organic certification and transition that would otherwise not be available in Indiana. In addition, there is a need for increased investment in extension support for farmers transitioning to organic, requiring training for county-level educators and, at the state level, the addition of new educators focused on organic methods. In the interviews, all conventional farmers who are considering organic certification expressed interest in attending extension outreach and education programs focused on transitioning to organic production. To serve conventional farmers who may be interested in organic transition, it will be important to work with non-operating landowners, who control 51% of cropland in Indiana (Ulrich-Schad et al., 2016). Conventional farmers say landowners play an important role in their decision-making about the farming practices they consider. In addition, extension educators could consider working collaboratively with input dealers and crop consultants who have an interest in organic production systems, given that these are the most influential groups for conventional farmers. For instance, the Organic Agronomy Training Service (OATS) is a national, Midwest-oriented initiative that provides educational and professional development for farmer advisors, including crop consultants, agronomists, and extension educators, to increase their knowledge and confidence in organic grain production (www.organicagronomy.com).



Weed electrocution technology, such as this weed zapper implement, could play a role in weed management on organic grain farms. Photo by Michael O'Donnell

Conclusion

Overall, our study identifies several opportunities for further research, as well as investment, in education and outreach for Indiana farmers interested in or who are in the process of transitioning to certified organic grain production. These include:

- Policy initiatives to address concerns about competition from organic grains imported from other countries, and unverified organic grains, to ensure the integrity of the U.S. organic label.
- Research and extension focused on weed control in organic farming systems.
- Policy initiatives to address farmers' concerns about crop loss and damage from GMO and pesticide drift contamination.
- Extension programs that support farmers in finding reliable buyers of transitional and certified organic grains, and education on the market opportunities for certified organic grains. In addition, programs to support farmers in accessing information on organic market trends and price premiums, as well as organic certification, production, storage and handling requirements.
- Extension support for addressing certified organic input costs and availability.
- Extension outreach and support to develop effective farmer-to-farmer networks to facilitate knowledge sharing and peer mentoring, and to better connect novice organic farmers with mentors and role models.
- Provide resources to compensate experienced organic farmers for serving as mentors and role models for other farmers.
- Increased extension support for farmers in the process of transitioning to organic certification, to ensure that they are successful and can serve as future role models.
- Research and extension programming on organic systems for farmers using no-till and minimum/reduced tillage practices.
- Long-term agronomic research on organic crop rotations to measure impacts of tillage and no-till management on soil health and quality parameters.
- Investment in education initiatives to better prepare crop advisors and consultants to support farmers in transitioning to organic production.
- Investment in farmer education and support programs operated by organic certifying organizations and nonprofit organizations that provide critical transition support.

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References

- Bowling, L., Widhalm, M., Cherkauer, K., Beckerman, J., Brouder, S., Buzan, J., Doering, O., Dukes, J., Ebner, P., Frankenberger, J., Gramig, B., Kladvik, E., Lee, C., Volenec, J., and Weil, C. "Indiana's Agriculture in a Changing Climate: A Report from the Indiana Climate Change Impacts Assessment" (2018). Agriculture Reports. Paper 1. <http://dx.doi.org/10.5703/1288284316778>
- Dimitri, C. & L. Oberholtzer. (2009). Marketing US organic foods: Recent trends from farms to consumers.
- Gomiero, T., Pimentel, D., & Paoletti, M. G. (2011). Environmental impact of different agricultural management practices: conventional vs. organic agriculture. *Critical reviews in plant sciences*, 30(1-2), 95-124.
- Greene, C. (2009). Emerging issues in the US organic industry (No. 55). DIANE Publishing.
- Greene, C., G. Ferreira, A. Carlson, B. Cooke, and C. Hitaj. (2017). Growing Organic Demand Provides High-Value Opportunities for Many Types of Producers. *Amber Waves*, February 6. USDA Magazine Feature: Natural Resources & Environment. <https://www.ers.usda.gov/amber-waves/2017/januaryfebruary/growing-organic-demand-provides-high-value-opportunities-for-many-types-of-producers/>
- McBride, W., C. Greene, L. Foreman, and M. Ali. (2015). The profit potential of certified organic field crop production. USDA Economic Research Service, July. <https://www.ers.usda.gov/publications/pub-details/?pubid=45383>
- Organic Trade Association (2016). State of the Organic Industry 2016. <http://ota.com/resources/market-analysis>
- Organic Trade Association (2018). U.S. organic sales break through \$50 billion mark in 2018 [Press Release]. <https://ota.com/news/press-releases/20699>.
- Personal communication with Michael O'Donnell.
- Reimer, A.P., Thompson, A.W., & Prokopy, L.S. (2012). The multi-dimensional nature of environmental attitudes among farmers in Indiana: implications for conservation adoption. *Agriculture and human values*, 29(1), 29-40.
- Scialabba, N.E.H., & Müller-Lindenlauf, M. (2010). Organic agriculture and climate change. *Renewable Agriculture and Food Systems*, 25(2), 158-169.
- Stalker Prokopy, L. and Ulrich-Schad. 2014. Understanding Nutrient Management Decisions: Examination of the Agricultural Community in Indiana. Purdue University, Department of Forestry and Natural Resources, Natural Resources Social Science Lab.
- Stephenson, G., L. Gwin, C. Schreiner, S. Brown. 2017. *Breaking New Ground: Farmer Perspectives on Organic Transition*. Corvallis, OR: Oregon Tilth and OSU Center for Small Farms & Community Food Systems
- Schreiner, S. Brown, Oregon Tilth. (2016). *Breaking New Ground: farmer perspectives on organic transition*. Published by Oregon State University and Oregon Tilth.
- Taus, A., Ogneva-Himmelberger, Y., & Rogan, J. (2013). Conversion to organic farming in the continental United States: A geographically weighted regression analysis. *The Professional Geographer*, 65(1), 87-102.
- Ulrich-Schad, J. D., Babin, N., Ma, Z., & Prokopy, L. S. (2016). Out-of-state, out of mind? Non-operating farmland owners and conservation decision making. *Land Use Policy*, 54, 602-613.
- United States Agricultural Census. 2017. <https://www.nass.usda.gov/Publications/AgCensus/2017/index.php>
- Wilcox, C. (2007). Statement of the Executive Director & CEO, Organic Trade Association.