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Are Beginning and Small-Scale Farmers Drawn to Diversification? Ten Years' Findings From Ohio

Abstract

Diversifying a farm's production operations or marketing channels can boost income and raise farm survival rates. But are beginning and small-scale farmers inclined toward a strategy of diversification? We analyzed 578 attendee surveys from 10 years of an Extension workshop for new and small-scale farmers in Ohio. We investigated the farming profile of beginning and small-scale farmers, the degree to which they are interested in pursuing diversified farming, and whether these interests vary by gender. We found evidence that new and small-scale farmers are interested in alternatives to commodity grain farming, that these alternatives are associated with diversified farming systems, and that some specific diversification interests vary by gender.

Keywords: [beginning farmers](#), [diversification](#), [new farmers](#), [Ohio](#), [women farmers](#)

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Introduction

In this article we present 10 years of data from an Extension workshop for new and small-scale farmers in Ohio to shed light on the farming profile of beginning and small-scale farmers and determine whether this population is inclined to pursue diversified farming. Our goal is not to evaluate the efficacy of the workshop, but to identify the potential interests of beginning and small-scale farmers. Extension agents can design appropriate programs suited to their target population with a better understanding of who wishes to start a farm and the types of operations they wish to run. The findings also have implications for the food and farm production system: New farmer training programs featuring farm diversification as a strategy could aid in the survival rate of new farm enterprises.

Beginning farmers are defined by the U.S. Department of Agriculture as those farming for 10 years or less. According to data from recent agricultural censuses, 48% of beginning farmers reporting positive sales in 2007 also reported positive sales in 2012, versus a rate of 56% for all farms (Key, 2016). Among beginning farmers, those with larger operations (measured by sales) are substantially more likely to survive than smaller operations (Key, 2016). At the same time, small-scale farmers who market directly to consumers are also more likely to survive than those who do not (54% survival rate versus 47% survival rate, respectively; Key, 2016). In an unpredictable economic environment with low and volatile crop prices, beginning farmers are

faced with a choice: scale up to a conventional, large-acreage monoculture to achieve economies of scale or choose a more diversified production or marketing portfolio to achieve what are called "economies of scope" (Wimmer & Sauer, 2017). Growing a diversified farm business can bring economic, social, and ecological benefits (Barbieri & Mahoney, 2009; Kremen et al., 2012).

Regarding farm size, Melhim and Shumway (2011) found that economies of scope are more significant for smaller farms than for larger farms, specifically in the dairy sector. Muhammad et al. (2004) found similar results for small farms in Tennessee and highlighted three critical success factors: reduced debt loads, high-value marketing outlets, and production diversification. Regarding marketing practices, Key (2016) showed that the survival rate of beginning farmers is higher when they market directly to consumers. Detre et al. (2011) reported a combination of these findings: Farmers engaging in direct marketing increase their gross sales relative to farmers who do not, and direct marketing sales are negatively correlated with large farm size and cash grain production.

What then is the role of extension and training in helping new and small-scale farmers understand the complexities of diversification? It is an important question, for, as Niewolny and Lillard (2010) noted, "beginning farmer training . . . is perhaps one of the most significant yet poorly understood areas of agriculture and food system research" (p. 66). McFadden and Sureshwaran (2011) noted that in many cases individuals new to farming enter the sector "only to find that there are few technical assistance offerings or management and decision tools oriented toward smaller-scale, diversified operations" (p. 1).

A small but growing body of literature has recently addressed this gap for farmers pursuing market or operational diversification. Sirrine et al. (2016) found positive outcomes for farm management and planning skills after a multiyear education and leadership development program for new specialty crop farmers in northern Michigan. After 2 years of the program, 100% of attendees reported expanded awareness of the value of new marketing strategies, and 61% had changed some aspect of their operations or land management practices to improve farm viability (Sirrine et al., 2016). In Pennsylvania, Extension partnered with the Farm Service Agency to develop a program for more than 367 small-scale farmers who received training in production planning, livestock and crop production, and enterprise budgeting (Hanson et al., 2002). Significant gains in knowledge occurred in all three areas, with the largest impact registered in budgeting and enterprise analysis (Hanson et al., 2002). Jablonski et al. (2017) analyzed the determinants of farm profitability for participants in a new farmer program in the western United States and found that increased profitability for program graduates was correlated with increasing the number of farm enterprises and practicing season extension techniques—both in line with the diversification literature—though negatively correlated with increasing the number of crop varieties. Hence, they advocated for a nuanced model that increases the diversification of production enterprises while enhancing specialization within enterprises. Their model reveals the different levels at which farm diversification can take place and leads back to our central question: What types of diversification, if any, are participants in a new and small farm college interested in pursuing?

Methods

We used data from entry surveys administered to participants in the New and Small Farm College (NSFC), an initiative of Ohio State University (OSU) Extension. The NSFC is held one to three times annually, each time in a different county in Ohio, and consists of an 8-week workshop that covers a variety of topics, from planning

to marketing to the basics of animal and crop production. Workshop participants are asked to fill out a survey used to gather basic demographic data; farm-related data, such as acreage owned or rented; and data on motivations for farming and specific farming interests.

The survey was created by a group of OSU Extension educators and field specialists and tested with a group of farmers to make sure the questions were relevant and that all terms used (e.g., "row crop") would be understandable to new farmers. It was reviewed and approved for use by the assistant director of agriculture and natural resources at OSU. With one modification made in 2011 (see below), the same form has been in use since 2007. The form was created to provide workshop organizers with a sense of attendee demographics, not with the intention of conducting scholarly analysis. However, we recognized value in the accumulated responses to hundreds of surveys administered across all regions of the state for shedding light on the farming profile and operational preferences of beginning and small-scale farmers in Ohio.

We analyzed results from 578 surveys that spanned 10 years (2007–2016) and represented 22 workshops conducted in 21 Ohio counties. For categorical data, we coded results and used tabulations in Microsoft Excel to create a general demographic profile of workshop attendees and to analyze whether these attendees were drawn to different forms of diversification. Some questions required respondents to rank a list of farming options; for these data we used STATA to calculate Pearson's chi-square values and determine whether these preferences varied by gender.

Results and Discussion

Who Attends the NSFC?

Demographics

Table 1 displays the breakdown of survey respondent demographics by age, gender, and education level. For all three characteristics, we found that the workshop population differed from the general farmer population in ways corroborated by other new farmer studies. For example, the average age of workshop participants was 46, more than a decade younger than the average age of U.S. farmers in general. Workshop participants also were more likely than not to have a college degree (69% of participants), a finding that aligns with a recent study showing that beginning farmers are more likely than farmers in general to have a 4-year college degree (National Agricultural Statistics Service [NASS], 2014). These data are important because age has impacts on accrued farming knowledge and access to capital and land and a more advanced degree may open avenues to other forms of capital or market access—all of which can affect the probability of farm success. Additionally, beginning farmers skew more female than the general farming population: 2012 Census data indicate that 17% of beginning farmers are female, compared to 12% of established farmers (NASS, 2014). With 42% female farmers, our sample was far more skewed—a fact that may tell us much about the specific subset of farmers interested in this type of Extension workshop.

Table 1.

Demographic Profile of Respondents From Ohio New and Small Farm College, 2007–2016

Variable

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%

Age			
<35 yrs.		122	23
35–54 yrs.		256	47
55–64 yrs.		130	24
>64 yrs.		32	6
Gender			
Male		314	55
Female		243	42
Couples		19	3
Highest level of education			
High school diploma		158	31
2- or 4-year degree		252	49
Graduate degree		101	20

Farm Size

As depicted in Table 2, the size of farms represented in the sample skewed small. After we removed the maximum reported acreage (1,700 ac) and minimum reported acreage (0 ac) to address outliers, the average farm size was 66 ac, and the median size was 29 ac. Two thirds of the farms were less than 50 ac, and 83% were less than 100 ac. These findings, too, are in line with the picture of beginning farmers more generally. Census data indicate that beginning farmers harvest an average of 126 ac, less than half the average 278 ac harvested by established farmers (NASS, 2014). Key and Lyons (2019) have noted that "beginning farms generally earn less farm income and operate at a smaller scale" (p. 5), a situation that has important implications as small acreage renders it practically impossible to create a viable cash grain or other monoculture operation.

Table 2.
Farm Size Distribution of Respondents From Ohio New and Small Farm College, 2007–2016

Variable	No. of acres	No.	%
Average farm size	66		
Median farm size	29		
Farms <50 ac		320	67
Farms <100 ac		395	83

Are New and Small-Scale Farmers Drawn to Diversification?

Motivation to Farm

As a beginning point, it is useful to ascertain the reasons that drove individuals to own or operate a farm. A question on the survey asked "What was your motivation for farm ownership?" Respondents could choose more than one answer. The results are displayed in Table 3. Only one third of respondents (36%) chose "make a living," whereas nearly four fifths (78%) chose "lifestyle" and two fifths (40%) chose "retirement." Because respondents could check more than one answer, we had to explore further to determine the degree to which farming for lifestyle or for retirement was mutually exclusive from farming to make a living: Of the 202 individuals who selected "make a living," only 33 (6% of the total sample) did not also select "lifestyle," implying that only a small percentage of the workshop attendees intended to farm full time. This, too, is in line with the profile of beginning farmers nationwide, as a full 20% more beginning farmers work off the farm (75%) than do established farmers (56%; NASS, 2014).

Table 3.

Motivation for Farm Ownership of Respondents From
Ohio New and Small Farm College, 2007–2016

Motivation	No.	%
Lifestyle	443	78
Retirement	231	41
Make a living	202	36
Investment	157	28
Tax advantage	135	24
Inherited property	110	19

Note. No. of responses = 566. Respondents could choose multiple answers.

Farming Interests

A second question on the survey asked respondents to indicate their general operational interests by selecting from a list of five options, as indicated in Table 4. Again, respondents could check more than one box, but by exploring different answers, we identified interesting patterns. The two answers that dominated were interest in growing "other crops," which can be logically interpreted to mean any crop other than traditional row crops, and interest in raising animals.

Table 4.

Farming Interests of Respondents From Ohio New and
Small Farm College, 2007–2016

Interest	No.	%
Other crops ^a	379	72
Animals	369	71
Row crops	210	40
Alternative uses	150	29
Timber	146	28

Note. No. of responses = 523. Respondents could choose multiple answers.

^a Crops other than row crops.

We further addressed participants' operational interests by exploring respondents' selection of both row crops and other crops versus selection of only one or the other. Results are displayed in Tables 5 and 6. Of the 210 individuals who selected "row crops" as an operational goal, only 64, 12% of the total sample, selected row crops and did not select "other crops" (Table 5). On the other hand, of the 379 individuals who selected "other crops," 233, or 45% of the total sample, selected only "other crops" and did not also select "row crops" (Table 6). We can infer that workshop participants were likely to veer away from traditional commodity grain crops and toward alternative crops that might include fruits, vegetables, hay, or even nontraditional grain crops grown on small scale—an inference backed up by anecdotal observations from Larry Nye and his colleagues who have run the NSFC since its inception.

Table 5.
Respondents From Table 4 Who Selected "Row Crops"

Response	No.	Percentage who selected "row crops"	Percentage of all respondents
Selected "row crops" but not "other crops"	64	30	12
Selected both "row crops" and "other crops"	146	70	28
Total	210	100	40

Table 6.
Respondents From Table 4 Who Selected "Other Crops"

Response	No.	Percentage who selected "other crops"	Percentage of all respondents
Selected "other crops" but not "row crops"	233	61	45
Selected both "other crops" and "row crops"	146	39	28
Total	379	100	72

Data presented in Table 4 demonstrate that beginning and small-scale farmers are more drawn to alternative crops than commodity row crops, but does that necessarily mean they are drawn to diversification? After all, a person drawn to alternative crops could simply plant their entire acreage to a monoculture of pumpkins or buckwheat or so on. A third question from the survey sheds light on this question. Starting in 2011, the survey instrument included a question that listed 10 categories of animal rearing and seven categories of crop production/marketing and asked respondents to identify areas of potential interest by ranking their top three categories for each. Tables 7 and 8 show the number of times each category was ranked #1, giving a more fine-grained sense of respondents' farming preferences.

Table 7.

Preference Rankings for Categories of Animal Rearing Among Respondents From Ohio
New and Small Farm College, 2007–2016

Interest	No. times ranked #1	Percentage of all animal #1 rankings
Beef cattle	85	37
Poultry	58	25
Sheep	22	10
Meat goats	17	7
Dairy goats	14	6
Hogs	14	6
Horses	12	5
Dairy cattle	4	2
Alpaca/llama	2	1
Rabbits	2	1

Table 8.

Preference Rankings for Categories of Crop Production/Marketing Among Respondents
From Ohio New and Small Farm College, 2007–2016

Interest	No. times ranked #1	Percentage of all crop/market #1 rankings
Hay	93	37
Vegetables	40	16
Greenhouse production	33	13
Sell from home	26	10
Small fruits	22	9
Sell at farmers market	19	8
Tree fruits	18	7

Regarding the animal categories, there existed strong preferences for raising beef cattle (ranked #1 by 37%

of respondents) and poultry (25%), with sheep a distant third (10%). Knowledge that few of the workshop attendees intended to make a full-time living from farming helps us interpret these data. For example, if we assume that few of the attendees intend to raise poultry full time on an industrial scale, then most of the individuals who ranked poultry as their #1 animal category likely planned to have poultry along with other farm enterprises. Regarding cattle, although it is more common for farmers to raise beef cattle as their primary source of farm income than poultry (NASS, 2015), the cost of purchased feed makes this a more attractive option if a farmer can pasture the cattle and/or grow some of their feed. Hence, we can expect that many of the farmers who intended to raise beef cattle also intended, at a minimum, to grow hay, and the numbers bear this out: Of the 85 individuals who ranked beef as their #1 animal preference, nearly two thirds (52) also ranked hay as their #1 crop preference.

The same logic holds as we examine the third ranked animal category (sheep) and the second and third ranked crop categories (vegetables and greenhouse production). Flock size data suggest that very few Ohio farmers who raise sheep do so as their sole source of farm income (NASS, 2019a), so presumably the 22 respondents who listed sheep as their top preference would have a flock in addition to other farm enterprises. Turning to crops, the number of farmers raising vegetables or growing crops in greenhouses is growing rapidly in Ohio (NASS, 2019b), and most such operations are inherently diversified with a variety of vegetables, fruits, and/or horticultural products, so we similarly conclude that most of the 73 respondents who listed either vegetables or greenhouse production as their top crop preference intended to have a diversified farm operation.

Are There Differences in Diversification Preferences by Gender?

Survey respondents reported their gender, allowing us to parse the data a final time to explore whether diversification interests varied by gender and whether any such differences were statistically significant. As Table 9 shows, preference among males or females existed for certain categories of farm enterprise diversification. If we use $p < .10$ as the statistical cutoff, growing hay, raising beef cattle, and raising hogs were preferred by male respondents, whereas raising dairy goats, selling items from home, and selling at a farmers market were preferred by female respondents. These gendered differences do not reveal anything further about diversification preferences of new and small-scale farmers in general, but awareness of them is useful to Extension agents for honing messaging and outreach strategies when promoting diversification practices among subsets of the farm population.

Table 9.
#1 Preference Rankings, by Gender, Among Respondents From Ohio New and Small Farm College, 2007–2016

Category	Male # (%)	Female # (%)	Total # (%)
Animal categories			
Beef cattle*	52 (41.6)	29 (29.9)	81 (36.5)
Poultry	27 (21.6)	29 (29.9)	56 (25.2)
Sheep	14 (11.2)	8 (8.2)	22 (9.9)

Meat goats	9 (7.2)	8 (8.2)	17 (7.7)
Hogs**	12 (9.6)	2 (2.1)	14 (6.3)
Dairy goats**	4 (3.2)	10 (10.3)	14 (6.3)
Horses	4 (3.2)	7 (7.2)	11 (5.0)
Dairy cattle	2 (1.6)	1 (1.0)	3 (1.4)
Alpaca/llama	1 (0.8)	1 (1.0)	2 (0.9)
Rabbits	0 (0)	2 (2.1)	2 (0.9)
Totals	125 (100.0)	97 (100.0)	222 (100.0)
Crop production/marketing categories			
Hay***	63 (48.1)	26 (23.4)	89 (36.8)
Vegetables	18 (13.7)	19 (17.1)	37 (15.3)
Greenhouse production	15 (11.5)	17 (15.3)	32 (13.2)
Sell from home***	8 (6.1)	18 (16.2)	26 (10.7)
Small fruits	12 (9.2)	9 (8.1)	21 (8.7)
Sell at farmers market*	7 (5.3)	12 (10.8)	19 (7.9)
Tree fruits	8 (6.1)	10 (9.0)	18 (7.4)
Totals	131 (100.0)	111 (100.0)	242 (100.0)
*Significant at $p < .10$. **Significant at $p < .01$. ***Significant at $p < .001$.			

Implications for Extension Professionals

The life experiences, motivations, and interests of NSFC attendees may help Extension professionals tailor content to optimize learning outcomes in programs directed at beginning and small-scale farmers. We found evidence that beginning and small-scale farmers in Ohio are younger and have higher levels of formal education than the general farming population and are more likely to be female than farmers more broadly. The surveys also suggested an interest in alternative or diversified farming systems, including preferences for raising beef cattle and poultry and growing hay and vegetables versus growing commodity row crops. Scholars recently have suggested that for these farmers to increase their chances of success, they should diversify and market directly to consumers (e.g., Key, 2016; Muhammad et al., 2004). Taken together, results from previous scholarly work combined with the survey data from our study bring us to several conclusions. One, it is important that small farm colleges and workshops include instruction on a wide range of topics, including production practices, new and emerging crops and products, value-added processing, and marketing tactics. Two, Extension programs addressing beef and hay production on small scales may be of interest to beginning farmers. Three, moving beyond beef, there is also sustained interest in other small livestock, including poultry, sheep, and meat goats, but minimal interest in raising hogs or dairy cattle. Finally, Extension professionals should market new and small-scale farmer workshops to female farmers, who make up a much larger percentage of this subgroup than they do of farmers as a whole. As Extension professionals continue to

prioritize meeting the needs of all farming constituents, including beginning and small-scale farmers and female farmers, an emphasis on diversification of both production and marketing could prove critical to long-term farm success.

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References

- Barbieri, C., & Mahoney, E. (2009). Why is diversification an attractive farm adjustment strategy? Insights from Texas farmers and ranchers. *Journal of Rural Studies*, 25(1), 58–66.
- Detre, J. B., Mark, T. B., Mishra, A. K., & Adhikari, A. (2011). Linkage between direct marketing and farm income: A double-hurdle approach. *Agribusiness*, 27(1), 19–33.
- Hanson, G. D., Parsons, R. L., Chess, W., & Balliet, K. L. (2002). Farm production analysis training for small farmers. *Journal of Extension*, 40(4), Article 4FEA8. <https://www.joe.org/joe/2002august/a8.php>
- Jablonski, B. B., McFadden, D. T., Sullins, M., & Curtis, K. R. (2017). Determinants of effective beginning farmer programming and implications for future programs. *Journal of Agricultural and Resource Economics*, 42(3), 427–438.
- Key, N. (2016, September). For beginning farmers, business survival rates increase with scale and with direct sales to consumers. *Amber Waves*. <https://www.ers.usda.gov/amber-waves/2016/september/for-beginning-farmers-business-survival-rates-increase-with-scale-and-with-direct-sales-to-consumers/>
- Key, N., & Lyons, G. (2019). *An overview of beginning farms and farmers*. (Economic Brief No. 29). U.S. Department of Agriculture Economic Research Service.
- Kremen, C., Iles, A., & Bacon, C. (2012). Diversified farming systems: An agroecological, systems-based alternative to modern industrial agriculture. *Ecology and Society*, 17(4), 44.
- McFadden, D. T., & Sureshwaran, S. (2011). Innovations to support beginning farmers and ranchers. *Choices*, 26(2), 1. <http://choicesmagazine.org/choices-magazine/theme-articles/innovations-to-support-beginning-farmers-and-ranchers/theme-overview-innovations-to-support-beginning-farmers-and-ranchers>
- Melhim, A., & Shumway, C. (2011). Enterprise diversification in US dairy: Impact of risk preferences on scale and scope economies. *Applied Economics*, 43(26), 3849–3862.
- Muhammad, S., Tegegne, F., & Ekanem, E. (2004). Factors contributing to success of small farm operations in Tennessee. *Journal of Extension*, 42(4), Article 4RIB7. <https://www.joe.org/joe/2004august/rb7.php>

National Agricultural Statistics Service. (2014). *Beginning farmers*.

https://www.nass.usda.gov/Publications/Highlights/2014/Beginning_Farmers/index.php

National Agricultural Statistics Service. (2015). *Cattle industry*.

https://www.nass.usda.gov/Publications/Highlights/2015/Cattle_Highlights.pdf

National Agricultural Statistics Service. (2019a). *2017 Census Volume 1, Chapter 1: State level data. Ohio. Table 27. Sheep and lambs flock size by inventory, sales, and wool production*.

https://www.nass.usda.gov/Publications/AgCensus/2017/Full_Report/Volume_1,_Chapter_1_State_Level/Ohio/

National Agricultural Statistics Service. (2019b). *2017 Census Volume 1, Chapter 1: State level data. Ohio. Table 39. Floriculture and bedding crops, nursery crops, propagative materials sold, sod, food crops grown*.

https://www.nass.usda.gov/Publications/AgCensus/2017/Full_Report/Volume_1,_Chapter_1_State_Level/Ohio/

Niewolny, K. L., & Lillard, P. T. (2010). Expanding the boundaries of beginning farmer training and program development: A review of contemporary initiatives to cultivate a new generation of American farmers. *Journal of Agriculture, Food Systems, and Community Development*, 1(1), 65–88.

Sirrine, J., Eschbach, C. L., Lizotte, E., & Rothwell, N. (2016). The New FARM Program: A model for supporting diverse emerging farmers and early-career Extension professionals. *Journal of Extension*, 54(4), Article v54-v4a1. <https://joe.org/joe/2016august/a1.php>

Wimmer, S. G., & Sauer, J. (2017, July 30–August 1). *The economic benefits of farm diversification: An empirical analysis of economies of scope using the dual approach* [Paper presentation]. Agricultural & Applied Economics Association Annual Meeting, Chicago, IL, United States.

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