

Growing the Agricultural Future: Evaluating a Beginner Farmer Training Program in the Chesapeake Region

Introduction and Relevant Literature

The demographics of American farmers have transformed over the past century. Across the country, agricultural producers are now exponentially older; according to the 2022 United States (US) Census of Agriculture, the average American farmer is now approximately 58 years old (US Department of Agriculture [USDA] National Agricultural Statistics Service Information [NASS], 2024). Although the proportion of female producers has increased, Black and Latino farmers continue to be underrepresented in this sector historically dominated by white male farmers (USDA NASS, 2024). The aging agricultural producer workforce and mixed progress towards greater diversity underscore a significant need for beginner farmer education programs to narrow workforce gaps and ensure more people interested in farming can access appropriate knowledge and resources (Jackman et al., 2016).

To address this need, the USDA funded a nonformal educational program targeting beginner farmers in the United States Chesapeake region (US). Implemented by the nonprofit organization Future Harvest, the overarching goals of the *Regional Resilience: An Integrated Approach to New Farmer Training in the Chesapeake* project (Beginner Farmer Training Program [BFTP]) were to: strengthen and diversify the new farmer pipeline across the Chesapeake region, build and connect a well-trained beginner farmer workforce, and support the long-term viability of new farm businesses. The project emphasized sustainable agricultural practices applicable to a range of production systems and aimed to facilitate an integrated, collaborative network to support novice farmers. Implemented during and while emerging from the COVID-19 crisis, the project also assisted farmers in navigating fluctuating regional markets and supply chains, exacerbated by the pandemic. A total of 225 farmer participants were engaged (95.7% of whom in Maryland, Washington DC, Virginia, West Virginia, and Delaware). The BFTP used a variety of in-person, hands-on, and virtual classroom-type educational techniques, including a mentorship component that paired participants with more experienced farmers to actually engage in the day-to-day operations of a host farm. The content and activities responded to evidence that barriers disproportionately inhibit minority and underrepresented farmers from obtaining information, resources (e.g., finance, field inputs, technologies) and linking to markets that are critical for continued farming success (Sanchez et al., 2019). Furthermore, research has shown that smaller-scale farmers' operations are at heightened risk of setbacks due to climate change, increased natural disasters, and natural resource degradation, which corroborates the importance of BFTP education including soil health and crop/livestock diversification, to help build more resilient and adaptative farming systems (Arbuckle et al., 2015).

This study presents findings and implications from an impact assessment of the BFTP conducted in late 2024 with input from 70 farmer survey respondents. The impact assessment was designed to measure outcomes, especially at the medium- and long-term levels, initially included in the project logic model, that can most likely be attributed to BFTP activities and efforts. Moreover, the robust analysis of results linked to both educational processes and content can inform and strengthen similar beginner farmer training efforts. Across the US and globally, educators and agricultural leaders can glean insights from the dynamics of the Chesapeake

Region, where the study occurred, with its exceptional agricultural and demographic diversity, natural resource challenges, and next generation interest in farming.

Theoretical Framework

Understanding beginner farmers' likelihood to adopt sustainable practices over the long term involves examining their progression through various behavior change stages. Thus, nonformal educators can effectively tailor their facilitation based on stakeholders' current engagement levels (Warner et al., 2024), aiming to guide participants (farmers in this case) from one stage to the next towards adoption (Clements, 1999). This study used the Transtheoretical Model of Change (TTM) to assess whether the BFTP facilitated farmers' movement from minimal interest and experience towards sustainable agricultural commercialization.

The TTM identifies five stages in the change progression: precontemplation, contemplation, preparation, action, and maintenance (Norcross et al., 2011). In precontemplation, individuals have not considered change or hold negative views. In contemplation, they consider change but lack a sense of urgency. During preparation, they intend to change and seek resources to get ready for this. Action involves actively adopting new practices. The final stage, maintenance, reflects the change becoming an ingrained habit due to perceived benefits (Warner et al., 2024). Although these stages are often viewed as linear, regression to earlier stages can occur. Although the TTM has been applied to conduct research on extension education and behavior change in agricultural and conservation contexts (e.g., Doran et al. 2022), the present study is the first, located by the authors, to use the framework to assess beginner farmer training.

Purpose and Objectives

The purpose of this impact assessment was to determine how effectively the Beginner Farmer Training Program prepared participants for long-term agricultural engagement in the Chesapeake Region of the US. The objectives of the study were to evaluate farmer participants' shifts in:

1. connections to supporting agricultural peers, mentors, and organizations
2. likelihood to continue pursuing sustainable agriculture

Methods

We applied impact assessment techniques, targeting BFTP participant respondents, to gather quantitative data via an online survey in fall 2024. The University of Maryland Institutional Review Board reviewed and approved the study protocol prior to data collection (# IRB 2261998-1). The evaluation design and all recruitment/sampling methods were aligned with best practices recommended by Dillman et al. (2009). The questions in the survey were designed based on the logic model proposed to USDA and the TTM to gauge shifts in engagement, and we leveraged feedback and validation by social science and content experts.

We e-circulated an anonymous link to the online survey to the 225 project participants on Future Harvest's email list. A total of 70 participants completed the online survey resulting in a

response rate of 31%. Our recruitment strategy was developed together with Future Harvest to ensure farmer participants were incentivized and shown appreciation for their time participating. Namely, survey respondents were provided the opportunity (fully optional) to join a random drawing to receive a two-day pass to the Future Harvest Annual Conference or a \$100 gift card to a well-known seed company (winners received one or the other).

We analyzed the quantitative data using descriptive statistics (e.g., mean, standard deviation, frequency) and inferential *t*-tests within SPSS software. Reliability of constructs was assessed using Cronbach’s alpha and was suitable for all constructs (Ary et al., 2019).

Findings

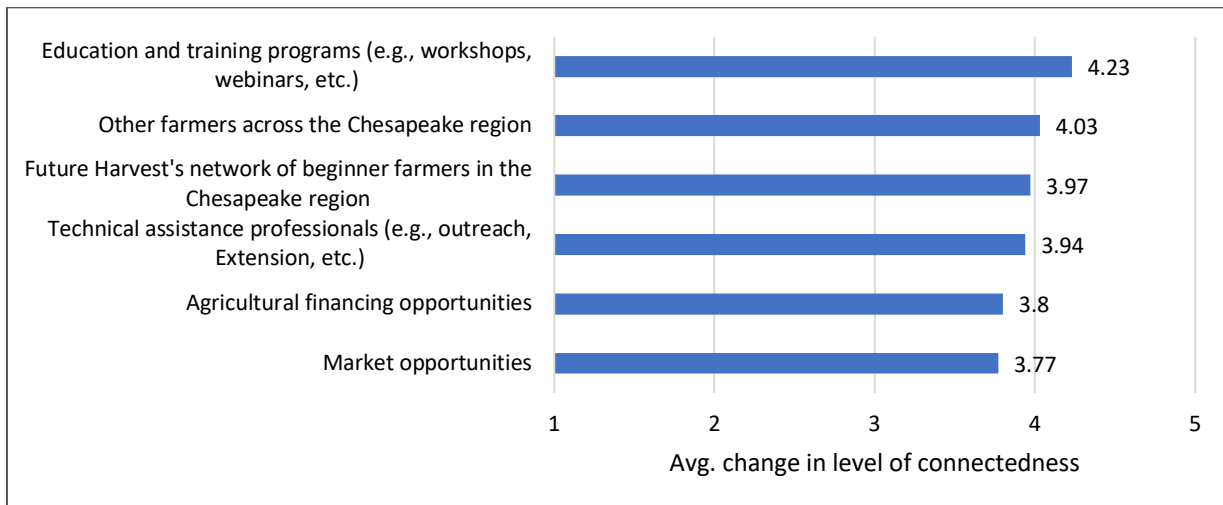
We first highlight the respondents’ demographics to address the BFTP goal to increase representation and diversify the future farmer workforce. The majority of respondents fell below the average US farmer age of 58 (only six were age 60 or older, while the remainder ranged from 18 to 59). Participants represented a diversity of genders (with more identifying as female), races (with over half identifying as non-white), and educational attainments with most (65.6% holding 4-year or master’s degrees).

Objective 1: Connections to Supporting Agricultural Peers, Mentors, and Organizations

Participants’ connectedness increased, overall, across the domains surveyed (Figure 1). The greatest positive shifts were in linkages to education and training and other farmers in the region. In contrast, the smallest shifts were with agricultural finance and market opportunities.

Figure 1

Respondents’ Change in Connectedness Over the Project



Note. *n* = 66. Respondents were asked to think back to the start of joining the Beginner Farmer Training Program with Future Harvest *versus* where they are today in order to indicate the change in their level of connectedness to the different people, resources, and organizations

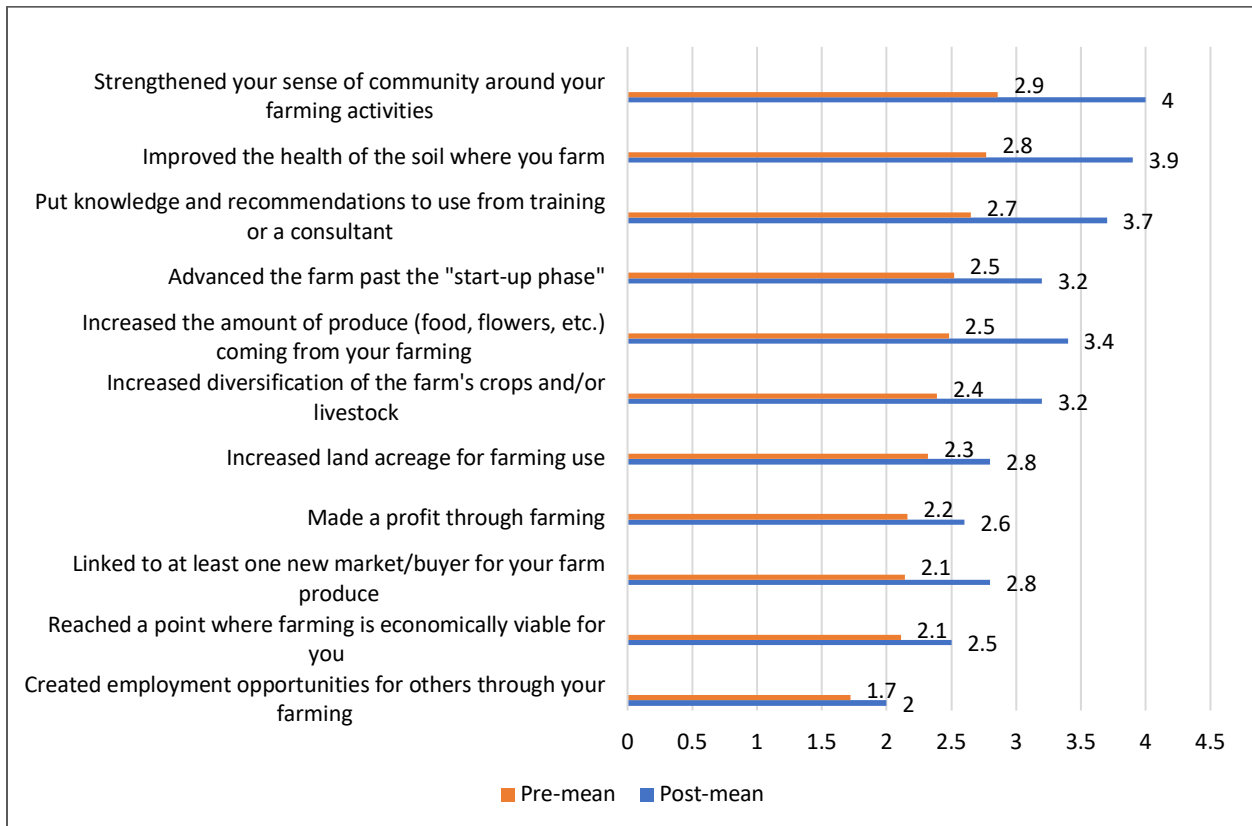
listed. Possible responses and value scores assigned were *Much lower* (1), *Slightly lower* (2), *About the same* (3), *Slightly higher* (4), and *Much higher* (5).

Objective 2: Likelihood to Continue Pursuing Sustainable Agriculture

The assessment of changes in engagement using the TTM in Figure 2 is likely the greatest quantitative testament to the achievement of the BFTP aims: in all cases, substantive increases can be seen between pre-project and time-of-assessment measures. Based on the scale used in the survey, most farmers moved closer to the preparation and action levels of engagement (versus the contemplation level). A paired *t*-test comparing the overall pre- and post-engagement means found a significant increase among the participants ($\Delta = 0.72$) ($t = 6.7$, $DF = 60$, $p < 0.01$). Commercialization-related practices (generating profit, economic viability, linking to buyers, and creating new employment opportunities) saw smaller increases compared to social/community and sustainable farming methods practices.

Figure 2

Respondents' Pre- and Post-Engagement in Agricultural and Commercialization Practices

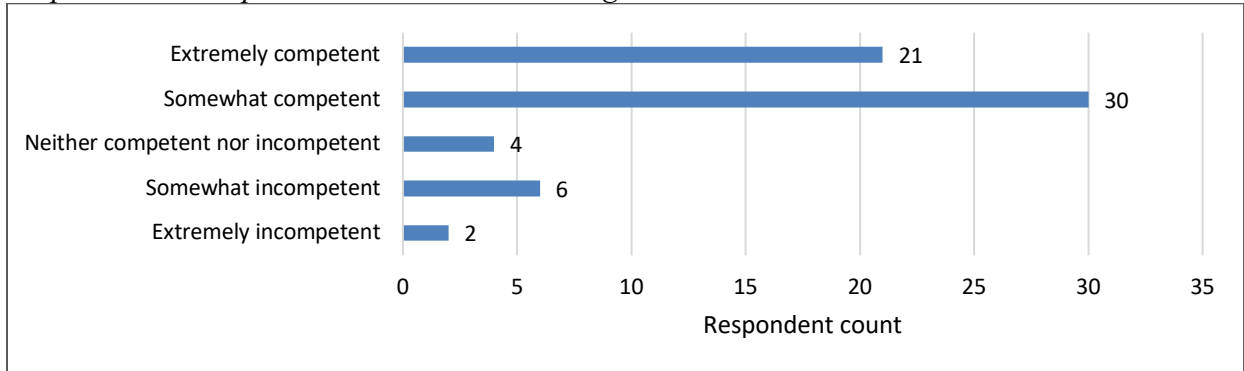


Note. $n = 61-65$. Framed using the Transtheoretical Model, respondents were asked about their level of engagement in sustainable agricultural practices the project targeted via education. Possible responses and value scores assigned for both the pre- and post-measures were *This is not important to me* (1), *I'm considering this* (2), *I'm preparing to do this soon* (3), *I started doing this in the past 2 months* (4), and *I've done this consistently (for at least 6 months)* (5).

Most respondents indicated at the time of the survey that they were somewhat competent (47% of respondents) or extremely competent (33%) they would continue farming over the next three years (Figure 3).

Figure 3

Respondents' Competence to Continue Farming Over the Next Three Years



Note. n = 63.

Discussion, Conclusions, and Recommendations

This assessment provides evidence that the BFTP effectively facilitated nonformal educational activities to result in positive outcomes, aligned with the original logic model, around farmer diversity and representation, training and preparation, and long-term business viability (to a lesser degree). Namely, participants gained inclusion in a diverse network of regional farmers and engaged in on-farm environmentally friendly practices, while they were still in need of capacity building on commercialization practices, at the time of the survey. Consistent with best practices in nonformal education, the program effectively used experiential learning, peer networking, and mentorship to engage diverse audiences (Suvedi & Kaplowitz, 2016). Participants especially seemed to benefit from their training farms, which provided practical, immersive learning as well as relationship-building with more experienced model farmers. These outcomes align with the broader goals of adult education, meeting learners where they are, respecting their lived experiences, and building practical skills for real-world application (Knowles et al., 2015). Despite these strengths, the findings also underscore a need to place greater emphasis on integrating business planning, market access strategies, and value-chain development into future curriculum.

In conclusion, the BFTP established a solid foundation for future farmers and represents a replicable model for other education and extension programs. Refinement of curriculum, particularly around hands-on learning about commercialization, will be critical to participants' long-term success and to ensuring that diverse new farmers are equipped to thrive in today's complex agricultural landscape.

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