

LEARNER PERSPECTIVES ON FARMER EDUCATION PROGRAMS IN MICHIGAN:
ENGAGING A NEW GENERATION OF FARMERS

By

Kathleen Amelia Reed

A THESIS

Submitted to

Michigan State University

in partial fulfillment of the requirements

for the degree of

Community Sustainability – Master of Science

2016

ABSTRACT

LEARNER PERSPECTIVES ON FARMER EDUCATION PROGRAMS IN MICHIGAN: ENGAGING A NEW GENERATION OF FARMERS

By

Kathleen Amelia Reed

As the farmer population continues to increase in age, a wave of new farmers will be needed to fill an increasing demand for locally grown and sustainably produced food. Due to a decline in the number of family farms throughout the country, an increasing number of these new farmers will likely not come from generational family farm backgrounds. Farming is both high-cost and high-risk for new farmers. Thus, farmer education around practical farm skills, decision making, and management is important for those who wish to join the community of agricultural practitioners, especially for those who do not have the expertise or proficiency to begin a farm business on their own.

Educational programs located on-farm and centered on experiential learning can teach these skills outside of the formal, degree-based system. Experiential education programs are growing in number across the country, but there is still very little known about participant perspectives on these programs that are part of an alternative knowledge system based on co-created, horizontal knowledge.

This study focuses on three farmer education programs in Michigan and examines how these programs create meaningful experiences for farmer-learners. The study finds that the programs foster the co-creation of knowledge on farm, where knowledge can be shaped and reshaped throughout the program. Programs do this by creating a space in which learners have the flexibility to learn through decision making, through trial and error, and in collaboration with other participants and staff. As learners take part in and then move on from these programs they become part of a growing community of people who are playing a role in the development of a new regional food system and participating in the larger sustainable agriculture movement.

ACKNOWLEDGEMENTS

There are many I would like to thank whose support and care have made this thesis possible. First, I would like to offer my sincere thanks and gratitude to my advisor, Dr. Kimberly Chung. Her steady support and guidance throughout the past two years has been invaluable in my learning process, especially as I shaped (and reshaped) this research and writing through the semesters. Additionally, I would like to thank my graduate committee, Dr. Shari Dann and Dr. Judith Barry for their patience, support, and thoughtful contributions to my work.

To the farm owners and staff that allowed me to visit and work side by side with learners and managers, thank you for your welcome and your company throughout my time spent in the fields. Also, to the learners who sat down with me to share their personal insights and experiences, I sincerely appreciate your time and your openness in sharing your thoughts about your time with these programs. I wish you all the best as you move forward. Thank you for making this work possible.

I would also like to offer thanks to all the staff at the Michigan State University Center for Regional Food Systems, especially my team with the Michigan Good Food Charter. I have learned so much from working with such passionate and hardworking individuals. Thank you also to the Department of Community Sustainability and the GACC for providing funds to make part of this research possible.

Finally, I would like to send love and a great deal of thanks to my wonderful family and friends. They have supported me every step of the way along my journey and for that I will be ever grateful.

TABLE OF CONTENTS

LIST OF TABLES	vi
KEY TO ABBREVIATIONS	vii
1. INTRODUCTION	1
1.1 RESEARCH QUESTIONS	3
2. LITERATURE REVIEW	4
3. METHODS	10
3.1 DATA COLLECTION	11
3.2 DATA ANALYSIS	12
4. CASE SITE DESCRIPTIONS	13
4.1 UNIVERSITY CERTIFICATE PROGRAM	13
4.2 PRIVATE FARM INTERNSHIP	14
4.3 INCUBATOR FARM PROGRAM	14
4.4 CASE SITE COMPARISON	15
5. RESULTS AND DISCUSSION	16
5.1 WHAT ARE THE SIMILARITIES AND DIFFERENCES BETWEEN THESE PROGRAMS AS THEY WORK TO MEET THE EDUCATIONAL NEEDS OF LEARNERS?	16
5.1.1 SIMILARITIES IN PROGRAMMATIC APPROACH	16
5.1.2 DIFFERENCES IN PROGRAM DESIGN	18
5.1.2.1 PRIVATE FARM INTERNSHIP	18
5.1.2.2 INCUBATOR FARM PROGRAM	21
5.1.2.3 UNIVERSITY CERTIFICATE PROGRAM	24
5.2 HOW ARE THESE PROGRAMS BUILDING AN ALTERNATIVE KNOWLEDGE SYSTEM AROUND FOOD AND AGRICULTURE IN MICHIGAN?	26
5.2.1 CREATING SAFE SPACES FOR PARTICIPANT LEARNING	26
5.2.2 ON-FARM COMMUNITY	30
5.2.2.1 GROWING COMMUNITY THROUGH A LEARNING COHORT	31
5.2.2.2 WORKING AND LIVING ON-FARM: INTENTIONAL COMMUNITY	33
5.2.2.3 THE INCUBATOR EXPERIENCE: COMPATRIOTS AND MENTORSHIP	36
5.2.3 KNOWLEDGE SHARING AND CO-CREATION OF KNOWLEDGE ON-FARM	38
5.3 WHAT ROLE DO THESE FARMER EDUCATION PROGRAMS PLAY IN THE LARGER SUSTAINABLE AGRICULTURE MOVEMENT?	45
5.3.1 BUILDING A COMMUNITY OF PRACTICE	45
5.3.1.1 FARM VISITS	46
5.3.1.2 CONVERSATIONS AND SHARED MEALS	47
5.3.1.3 FELLOW LEARNERS AND COMPATRIOTS	49

5.3.2	EVOLVING TO MEET LEARNER NEEDS	50
5.3.2.1	GROWING COMMUNITY CONNECTIONS	53
5.3.3	ALTERING PERCEPTIONS AND BUILDING SUPPORT	54
5.3.4	FINDING VALUE AND MAKING MEANING	56
6.	CONCLUSIONS	58
6.1	SUMMARY OF KEY FINDINGS	58
6.2	SUGGESTIONS FOR EDUCATIONAL PRACTICE AND FUTURE RESEARCH	59
	APPENDICES	61
	APPENDIX A. IN-DEPTH INTERVIEW GUIDES, LEARNER	62
	APPENDIX B. IN-DEPTH INTERVIEW GUIDES, FOUNDER AND MANAGER	65
	LITERATURE CITED	69

LIST OF TABLES

Table 1.	Case Site Comparison - Program Traits	15
-----------------	---	----

KEY TO ABBREVIATIONS

UCP University Certificate Program

PFI Private Farm Internship

IFP Incubator Farm Program

1. INTRODUCTION

As the farmer population continues to increase in age, a wave of new farmers will be needed to fill an increasing demand for locally grown and sustainably produced food. Interest in sustainable food systems has risen, drawing in prospective farmers who hail from non-traditional, non-farming backgrounds. While these prospective farmers have the interest in and passion for sustainable food and agriculture systems, they also have varying levels of experience and training (Hamilton, 2012; Lusher Shute, 2011). Without ties to generational family farms, these new farmers need to learn farming skills and need access to land and other infrastructure necessary to build a farm business. High startup costs and infrastructural needs create significant barriers to entry for those looking to start farming (M. C. Ahearn, 2011; Antoni, Mishra, & Chintawar, 2009; Hartarska & Nadolnyak, 2012; Lusher Shute, 2011; Mishra, Wilson, & Williams, 2009). Educational opportunities for these prospective farmers should meet learner educational goals and take learner barriers into account in programming and curriculum design. In order to help minimize future risks and best prepare learners for future endeavors, there is a need for farmer education that meets practical educational needs of learners and that helps move learners forward by going beyond simply teaching basic farming skills and agricultural theory.

Farmer education programs including practical farm skills, decision making, and management are important for those who wish to join the community of agricultural practitioners, especially for those who do not have the expertise or proficiency to begin a farm business on their own. Educational programs located on-farm and centered on experiential learning are teaching these skills outside of the formal, degree-based system. In Michigan, there are a variety of such programs available to those looking for educational opportunities that fall within what could be

coined as non-traditional, “alternative knowledge system.” These programs include certificate programs, apprenticeships and internships, and incubator farms.

This educational system may be described as alternative because it falls outside of the traditional, science-based, expert-driven method of dispersing agricultural knowledge. In the traditional knowledge system, the farmer is the recipient of knowledge rather than the generator of knowledge. “A key feature of the alternative knowledge system is a recognition that knowledge is not only the purview of a relatively small number of people in universities or laboratories but a human capacity that can be developed and enriched in everyday life” (Hassanein, N. 1999). This alternative agricultural knowledge, and how it is produced and disseminated, is at the foundation of the social movement around sustainable agriculture. Farmer-generated and co-created knowledge are primary components of alternative farmer education programs in Michigan.

The literature on prospective farmers is still very limited. What research has been done to better understand sustainable farming education programs focuses on program structure, development, purpose, and future goals (Niewolny & Lillard, 2010b) and does not focus on the learners who are taking part in these programs. Literature on beginning farmer education focuses on continuing education for farmers who are already practitioners in their communities, rather than those who are prospective farmers (Bailey, 2013; Byrd, 2011; Scanlon, Bruening, & Cordero, 1996; Trede & Whitaker, 2000). To our knowledge there is no literature that discusses the perspectives of prospective farmers and their views on existing learning opportunities. In particular, there appears to be no work that addresses what creates meaningful and worthwhile farmer education experiences for learners, nor what these programs are doing to help learners prepare for future endeavors, whether or not that is a career in farming.

This study uses a qualitative approach to examine the experiences of learners at three different farmer education programs in Michigan. This research can help farmer education programs understand what aspects of programming may be most significant to learners as they gain farming knowledge and experience. Understanding thoughts and perspectives can help programs meet learner needs into the future. This research can also help to grow a body of literature that examines the needs, barriers, and social context of prospective farmers as they gain knowledge and become practitioners of sustainable agriculture.

1.1 RESEARCH QUESTIONS

The primary research question addressed in this study is:

What creates meaningful educational experiences for those taking part in farmer education programs in Michigan?

This question has been divided into three sub-questions that build on the role each program plays in the learning community: from day-to-day on-farm operations and the workings of the farm community, to how the program is helping to advance the sustainable agriculture movement and prepare learners for their involvement in food systems work.

1. What are the similarities and differences between the programs as they work to meet the educational needs of learners?
2. How are these programs building an 'alternative knowledge system' around food and agriculture in Michigan?
3. What role do farmer education programs play in the larger sustainable agriculture movement?

2. LITERATURE REVIEW

The 2012 Agricultural Census shows the continuation of a three-decade long trend of an increasing average age of farmers, from an average age of 50.5 in 1982 rising to an average of 58.3 in 2012. The Census also shows an increase in the number of farmers aged 55 and over since 2007, with a marked decline in the number of farmers 54 and below (Agriculture Census 2012 Highlights, 2014). In addition to a rising average age of the American farmer, there has been a steady decline in new farmer entry into agriculture. Numbers shows a 20% decrease in the new farmers who have been on their farming operation for less than ten years and a 23% decrease in those who have been on their operations for less than five years (Agriculture Census 2012 Highlights, 2014). These numbers, coupled with an increase in average farm size and decrease in number of farms, suggest a growing need for new farmers who will supply the increasing demand from consumers for locally grown, sustainably produced food (Martinez et al., 2010; Pinchot, 2014).

The steady decrease in the number of farms throughout the country (Agriculture Census 2012 Highlights, 2014) indicates that some of these new farmers will not come from a generational family farm, where land and knowledge is often passed down through generations. These “new-generation” farmers (Hamm, 2015) will need access to education, land, and infrastructure needed to start a farm business. Prospective new-generation farmers have the passion for and interest in exploring a career in agriculture, but are without the support and educational structure to which those hailing from generational family farms have access (Hamm, 2001).

It is well known that the barriers to starting a career in farming are high. New farmers need access to land, capital, marketing opportunities, infrastructure, and other physical resources (M. C. Ahearn, 2011; M. Ahearn & Newton, 2009; Lusher Shute, 2011) in order to start a farm business. As

a result, challenges include a low availability of affordable agricultural land and high startup costs (M. C. Ahearn, 2011; Antoni et al., 2009; Mishra et al., 2009). Because of these constraints, beginning farms rely heavily on non-farm income sources, often with both primary and secondary operators and their spouses earning off-farm income (M. C. Ahearn, 2013). For example, the average annual beginning farm income is significantly less than that of established farms: \$1,902 for beginning farmers as compared to \$18,119 for established farmers in 2011 (M. C. Ahearn, 2013). As much as 30% of beginning farms did not have any positive value of production in 2009 (M. C. Ahearn, 2011), and might work for years until positive return on the farm is realized.

With their smaller scale operations, reliance on off-farm income, and an increased likelihood of selling primarily at farmers markets or directly to customers (M. C. Ahearn, 2013), beginning farmers appear to be more likely to start a farm business through a set of gradual steps. This gradual entry could be a way for farmers to brace themselves against the uncertainty and inherent risks of farming. It could also allow for new farmers to test out new techniques and have the freedom for trial and error that would only come from reliance on off-farm income as the primary salary and support (Reid, 2013).

The financial burden of program participation and constraints on time available to pursue other outlets are just some potential barriers to learners in new farmer programs. Because many of these learners are still exploring whether farming is a feasible and attractive career choice for them (Niewolny & Lillard, 2010), programs that can mitigate the level of investment needed by learners provide an appealing educational option for prospective learners. This is especially true with the risks and uncertainty they face should they enter into farming for careers (M. C. Ahearn, 2011; Antoni et al., 2009; Drollette, 2009a, 2009b; Hartarska & Nadolnyak, 2012; Lusher Shute, 2011;

Mishra et al., 2009). As such, these programs may also function as entry point for those who are interested in exploring local food systems and learning how to grow their own food, but who may enter into other career upon program completion (Hamilton, 2012; Niewolny & Lillard, 2010b). Farmer education programs may therefore serve both as a means for career exploration for those interested in farming, and as an in depth education for those who are interested in careers or avocational activities that connect to local food systems.

The last several decades have shown an increasing trend toward farmer education that is based in experiential knowledge and connected to the growing sustainable agriculture movement (Niewolny & Lillard, 2010b). These programs operate separately from traditional agricultural education that is based in formal institutions and favor a model of industrialization and expert-driven knowledge (Danborn, D.B., 1986; Hassenein, N., 1999; Kloppenburg J., 1991). An alternative system of knowledge is working to bring about a change in perspective and understanding of how agricultural knowledge is gained and disseminated. The alternative knowledge system is centered on farmer-generated and local knowledge, rather than the top-down and science based knowledge found in agricultural education at an institutional level (Hassenein, N., 1999; Hassanein & Kloppenburg, 1995; Kloppenburg J., 1991).

Within the alternative knowledge system, education programs are shaped in a way that allows for knowledge to be practiced in real-time situations on farms, paralleling practices and context in which learners will be applying that knowledge upon leaving the program (Griffiths & Guile, 2001; Hansman, 2001; Stein, 1998). Educational programs that are based in this situated knowledge allow learners to take part in working through problems faced by farmers as they are happening on-farm throughout the season. Situated knowledge is a social process by which learners

are engaged in real-time experiential work, in community with peer learners and the larger community of practice (Lave and Wenger, 1991; Stein, 1998).

The community of practice, another important aspect of situated knowledge, is a group of people who are practitioners and holders of knowledge, and who share a common sense of purpose in their work. Together with peer learners and more experienced practitioners, learners are immersed in the subject and able to develop skills and gain knowledge in place on farm. Situated learning for learners becomes a dialogue with the work and with the community of practice. This enhances learning and engages students directly in the learning process (Hansman, 2001; Stein, 1998). By building learner networks and knowledge through the community of practice within a locale, programs can help learners in future endeavors as they move on from these educational experiences and into the greater community as they become engaged food systems practitioners.

The knowledge being built through these programs can occur at varying levels, including the learner's personal knowledge gain and growth and that knowledge gaining that happens in tandem with other learners. Within a Participatory Action Research framework, knowledge and reflection on learning take place in first-, second-, and third-person modes of inquiry (Reason and Bradbury, 2008). Through a lens of farmer education, in which learning happens primarily on farm alongside other learners, first-person inquiry is the learner's own personal development and inquiry as they practice and reflect on their own personal and internal knowledge growth. Second-person inquiry is co-created, developed through peer and community interactions on-farm; it is seen through joint learning about, reflecting on, and reshaping of knowledge and ideas throughout the farm program. Third-person inquiry is where learner knowledge interacts with and becomes a part of the larger

alternative knowledge system, joining the larger community of practice and adding to farmer-generated knowledge.

By creating learning spaces that allow for communicative and collaborative learning processes (Greenwood and Levin, 2007), farmer education programs provide learners with the means to shape and reshape knowledge throughout their learning. The knowledge gained during the program can then be applied and reshaped as they move forward in their future work and continue to add to the community of practice and body of farmer-generated knowledge. Through first, second, and third person modes of inquiry (Reason and Bradbury, 2008) and through knowledge co-creation, learners engage in the work at a level that goes beyond theory and book-learning and moves into the realm of practical and applied knowledge within the community of practice. These models of knowledge creation are important because they describe the means through which prospective farmers are gaining knowledge within these farmer education programs.

Learners coming into farmer education programs are prospective farmers. Prospective farmers are those individuals who are exploring the possibility of farming or who are gaining skills with the direct purpose of going into farming but are not yet farming on their own. While there is literature focused on beginning farmers and the high barriers of entry into farming, little research has been done on prospective farmers. They fall outside of the scope of the United States Department of Agriculture's definition of "beginning farmers," which is defined as "those who have operated a farm or ranch for 10 years or less either as a sole operator or with others who have operated a farm or ranch for 10 years or less (United States Department of Agriculture Economic Research Service). The education literature that does address new farmers focuses on the

educational needs and preferences of beginning farmers who are already running their own operations (Bailey, 2013; Byrd, 2011; Scanlon et al., 1996; Trede & Whitaker, 2000).

Niewlony and Lillard (2010) begin to address the history of sustainable farming education programs and their place in the alternative knowledge system. They address program design and goals, the evolution of programs, and the social and historical context for these programs; however, the perspective of learners taking part in these programs is not addressed. There is a distinct need to look beyond those who are already beginning farmers and to look at how we are meeting, or not meeting, the educational needs of those who are still in the process of learning how to farm and who are considering farming as a possible career option. There is also a need to understand what makes this new wave of educational opportunities worthwhile and meaningful to learners. Why should they, when farming is already a high-risk venture, take the time and money to participate in these educational programs?

3. METHODS

This research utilized a qualitative, case study approach. A qualitative approach to this research was chosen for a number of reasons. First, qualitative research studies are particularly beneficial when exploring topics or perspectives that are not well documented or researched. Both prospective farmer education and the perspective of prospective farmers are topics with little documentation or research. Additionally, using a qualitative approach allowed for the voices of these prospective farmers to be heard, allowing for the flexibility of retaining

This study was designed to better understand the perspectives of prospective farmers taking part in farmer training programs in Michigan. Research was conducted in two distinct phases. The first phase of this research study was participant observation at each case site. The second phase of this research study was in-depth interviews with program participants and program founders or program managers.

Michigan was chosen as the overarching study site because of its agricultural diversity, number of farmer training programs around the state, support of local and regional agriculture, and the availability of market for new farmers. These things together make Michigan a positive environment for beginning to farm.

The types of programs chosen were to represent farmer education program diversity in two distinct ways. First, case sites chosen show the diverse range of program structures available to learners in Michigan, from mentor-based educational opportunities to programs that combine formal education methods of lectures, assignments, and workshops with experientially based learning into a hybrid model. The second way of representing diversity of programs in Michigan was through choose three different funding structures. The three types of program funding looked at in

this study are a private, working farm sustained entirely through farm sales, a grant funded program, and a university affiliated program that utilizes program tuition in addition to farm sales. The three specific case sites were chosen for this research study through conversations held with food systems leaders in Michigan. From these conversations, each program was recognized as making an effort in the area of farmer education.

3.1 DATA COLLECTION

Research was conducted in two distinct phases. The first phase of this research study was participant observation at each case site. This was conducted in order to better understand each farm, its programming, the pedagogical structures, and to gain context for the second phase of research. Participant observation was conducted four to six times at each case site over the course of two months. Field notes were taken after each observation and expanded within 24 hours.

The second phase of this research study was in-depth interviews with program participants and program founders or program managers. Interviews were conducted with three participants from each case site and one or two program founders or managers. Founders and managers were interviewed in order to better understand program structure and their educational goals for learners. In-depth interviews were recorded and then transcribed. Three learner interviews were conducted for each site, for a total of nine learner interviews. Of these nine interviewees, five were female and four were male. Four interviews were conducted with program managers or founders, with either one or two conducted for each case site. Interviews were collected over a period of three months.

Learners were chosen to participate through use of a criteria for selection. Those learners who fit the criteria of selection were then randomly sampled from. A list/series of criteria for

selection was used for these interviews in order to focus the research on learners who were using these programs as a way to explore a possible career path, including interest in starting to farming and interest in incorporating knowledge and skills gained in other food systems related careers. Learners who used these programs as summer work, to learn skills for hobby farming or personal gardening use, or those who had already undergone educational experiences and were only using the program as a way to access land were not sampled from.

3.2 DATA ANALYSIS

Each in-depth interview was digitally audio recorded and then transcribed verbatim. Thematic analysis was used in order to identify the main concepts and themes that emerged through the in-depth interviews. Emergent themes were then used to develop a coding system, and each interview was coded with use of NVivo. Each code was then summarized and put into displays (Miles & Huberman, 1994). Different matrices were used for each research question that included the list of emergent codes related to the research question. Codes were summarized by each individual interview as well as by program where applicable.

4. CASE SITE DESCRIPTIONS

This study uses a case analysis of three different educational programs available for prospective farmers in Michigan. Together, these three programs cover a wide range of experiential agricultural programs, from wholly experientially based learning to a curriculum based program that brings together experiential learning with more formal classroom based learning.

4.1 UNIVERSITY CERTIFICATE PROGRAM

The University Certificate Program creates a hybrid program structure by combining aspects of formal education, including lectures, workshops, readings, and assignments, with on-farm and experiential application of skills and concepts being learned. This program takes place on an organic farm that is owned by a public university; the farm still has many ties to people and departments on campus, yet supports itself financially through learner tuition and farm sales.

The University Certificate Programs runs full-time, March to November, with learners working and learning approximately 40 hours per week. There is a cohort of between 13-17 learners each year, with seven full-time staff members who oversee and facilitate learning. Due to the full-time nature of the work, staff advise learners not to work additional jobs off the farm, unless they can be regulated to ten hours or less. Learners pay \$8,900 in tuition for the nine-month program and pay their own living expenses. Scholarships are available to some learners in each cohort, however these only go to pay tuition costs and not cost of living during the nine-month program.

The farm has three primary market outlets: year-round Community Support Agriculture (CSA) shares, a farm stand held once a week on the university campus, and wholesale accounts. The farm's vegetable and livestock sales gross approximately \$250,000-\$300,000 a year; this figure does

not include income from program fees, nor does it include the cost of staff salaries or other operation costs.

4.2 PRIVATE FARM INTERNSHIP

The Private Farm Internship is hosted on a privately owned, working farm located in a rural southern Michigan community. This farm is the owners' livelihood. The income gained from farm sales throughout the year is the primary source of income for farmer owners. The farm has an approximately 300 member CSA. In addition, it sells at two farmers markets, and has restaurant and wholesale accounts.

All farm interns are required to live on farm, in intentional community with their peers and farm owners. Interns receive meals, housing, and a monthly stipend as compensation for their work on farm. Learners are the primary labor source for the farm and each person is a crucial part of keeping the farm running. The program is an immersive look at what the life of a farmer entails: learners work 5 ½ days a week, or what amounts to approximately 65 hours each week. They are present on farm through all of the day-to-day changes and challenges.

4.3 INCUBATOR FARM PROGRAM

The Incubator Farm Program is located on publically owned farmland five miles outside of the nearest city. It is overseen by a non-profit, whose role is to navigate community and town relationships with the farm, pay the farm manager's salary, and manage farm funding, including overseeing any grants received.

Each learner pays a program fee in order to farm a plot of land at the incubator. This is a multi-year experience, with maximum stay of five years. Learners come into the program with a farm business plan that includes growing and marketing plans for their farm business. Each learner

farms their own individual plot and earn income from the products they grow and sell. The Incubator Farm Program provides access to mechanical farm equipment such as tractors and tillers, hand tools, walk-in cooler space, storage space in a barn on-farm, and a wash-pack station for readying produce for sale. In addition to those physical resources provided, the learners have opportunities for cooperative buying power when purchasing bulk items such as compost or straw, as well as the knowledge and community connections the farm manager and non-profit organization have to offer. Outside of aforementioned resources, learners do not receive monetary support from the Incubator Farm, they pay their own seed and material costs in addition to cost of living.

4.4 CASE SITE COMPARISON

The three case sites studied represent an array of the programs often available to prospective farmers. Table 1 is a comparison of these sites based on information publically available from the webpages, program descriptions, and online program applications of each case site.

Table 1. Case Site Comparison - Program Traits

	University Certificate Program	Private Farm Internship	Incubator Farm Program
Program Cost	\$8900	\$0, paid monthly stipend	\$970 – \$2000 depending on acreage and hoophouse space desired
Living Costs	Not covered	Covered	Not Covered
Program Length	9 months	8 months, with opportunity for extension	7 months, with maximum stay of 5 years
Weekly Time Commitment	40 hours	65 hours	Part time, varies by learner schedule
Learning Methods	Experiential learning, books, workshops, lectures, assignments	Experiential learning, other opportunities optional	Experiential learning
Cohort Size	13-17	15-20	10-13
Number of Staff	7	3	1

5. RESULTS AND DISCUSSION

The purpose of this work is to understand the educational experiences of learners taking part in farmer education programs in Michigan. The research focuses on three case studies of farmer education programs in Michigan and addresses the following research questions:

What creates meaningful educational experiences for those taking part in farmer education programs in Michigan?

1. What are the similarities and differences between the programs as they work to meet the educational needs of learners?
2. How do these programs create an alternative knowledge system around food and agriculture in Michigan?
3. What role do the farmer education programs play in the larger sustainable agriculture movement?

5.1 WHAT ARE THE SIMILARITIES AND DIFFERENCES BETWEEN THESE PROGRAMS AS THEY WORK TO MEET THE EDUCATIONAL NEEDS OF LEARNERS?

5.1.1 SIMILARITIES IN PROGRAMMATIC APPROACH

From the in-depth interviews of learners at each case site, many similarities emerged between various learner's experiences. These similarities highlight aspects of their educational programming that were integral to their educational experience. First, each program offers learners an on-farm experience that includes hands-on learning directly in the field. According to learners, the hands-on approach to farming is integral to advancing knowledge and honing skills as participants move forward in their learning, work to meet educational goals, and eventually take their place in food systems work. One participant stated, "Farming is so hands-on... That is the most

important part of farming. If I'm not in the field I'm not learning more" (UCP). Another noted that a draw of taking part in an experiential learning farmer education program was that "It wasn't just sitting in a classroom reading and regurgitating information. It was all hands-on" (UCP).

By involving themselves in the hands-on, experiential nature of the work, learners begin to understand more fully the physical nature of the work. Looking down at his hands, a learner noted participants have to "Be prepared for hard work, definitely. Cold fingers, hurt fingers, blisters. It's all part of it. It's great" (UCP). Through the physical nature of the work, one participant has seen a gradual change in his physical strength and readiness for farming, "The work was pretty hard at first, but now that I've had a year of getting more in condition... I have not had one problem physically all season. It amazes me that I'm definitely stronger, I like that aspect" (PFI). Another finds that while the physical side is difficult, she finds enjoyment in pushing and challenging herself through farm work, "I love doing things that are physically taxing, which sounds so silly. But I just really love it. Even when I hate it, I love it... it's very challenging" (IFP).

Second, for all three case sites, each learner interviewed noted that being able to work outdoors and have a connection to the natural world was an important part of their decision to get into agriculture and to take part in an experiential education program. A participant of the University Certificate Program noted, "That deep connection [with nature] is something really powerful, it keeps drawing me back. I love being outside and there's just such a sense of wonder in seeing things grow" (UCP). A learner from the Private Farm Internship program said that, "...Walking the farm with the stars and sunrises and sunsets. It's just a beautiful place, the sky, the trees, everything is so beautiful. I think that's been one of the best things" (PFI). Another from the same program said that, "I like being outside. I like peace and quiet a lot. I can spend hours working in the field. I like to occasionally look up and see the blue sky and hear the birds that are migrating

through singing their songs and I like that aspect of the work” (PFI). From the incubator farm, a participant farmer said of her work, “I have enjoyed just sitting outside enjoying my chickens... I just love when they're all around doing their thing and I'm sitting in the middle watching them. They just bring me a lot of joy” (IFP). Finally, a learner summed up the draw of the outdoors by saying how working outside was a primary factor of why she applied to the program, “You know, even if it’s raining out, it’s better than a day at the office. It was the mantra [while] getting eaten alive, “I could you know be working at a computer right now”” (UCP).

5.1.2 DIFFERENCES IN PROGRAM DESIGN

While these programs are very different in their educational models, a primary difference is in the level of learner investment as they take part in the programs. When choosing a program learners have to weigh the monetary costs as well as the opportunity costs of their time to participate in these educational programs.

5.1.2.1 PRIVATE FARM INTERNSHIP

The Private Farm Internship program has the lowest investment on part of learners, as they do not have to pay program fees to participate. In exchange for their time and labor during the program, they receive a monthly stipend, housing located on the farm, and meals made with the food being grown. Through this setup, the internship is working to reduce some of the barriers that can be present in other educational opportunities, including costs of participation and housing. The farm owners noted that providing housing on-farm has been an important part of reasons interns come to work for them, “I think that gives us a little edge in terms of people coming out here is they have a spot to live” (PFI). They are also “eating food from the land and knowing where it comes from” (PFI). The stipend and on-farm community was a motivator for program participation for one interviewee: “[This farm] seemed promising because the stipend was good for an intern, and there

was a community there I thought would be really cool and exciting to start off” (PFI). She went on to say that in addition to housing and a good stipend, is that “having such accessibility to good food and getting dinner and food made for you all the time while only having to cook once a week, and eat these wonderful meals is a huge benefit” (PFI).

Despite the low level of initial financial investment on the part of learners, they do have to weigh the time cost of their participation in the program. The farm owner noted that the program is not just a job or a way to earn easy income. She said, “You have to recognize this as being more valuable than money. And if you have debt don’t do this. You know, if this is only about money to you it won’t be enriching enough. So, we really try to emphasize that it’s just more than a job” (PFI).

In exchange for intern labor and time, this program offers an immersive view of what running a working farm really entails, as they both work on farm and live in intentional community on farm during the program. Intentional community is a planned residential space, often centered on shared social ideal or collective values and interests, designed to have high degrees of social cohesion, community, and teamwork. The Private Farm Internship is purposely shaped to be intern driven, with a hands-off approach to the work from the farm owners. “My reins are really pretty loose,” the farm owner noted, “and people sort of rise to their level of whatever it is.” Learners can define their own goals for their participation and give as much or as little to the program as they want to. He continued, “And you know, as far as defining this particular educational system, I keep falling back on that word of holistic, sort of decentralized management...” (PFI). He also noted that the day-to-day decision making and reacting to the weather, the crops, and other on farm conditions make up the most of the program structure:

Most of what we’re doing here is harvest and just getting used to working everyday physically for long hours and then responding to things as they come up. ‘Oh things are getting dry’, you know? And in other words, the weather, we’re responding to the weather.

That's sort of the one thing that organizes us, so hot and dry or are we in a rainy cycle, do we have to worry about that, do we have to worry about diseases. So I guess as far as farmer training, I don't know, I could use the word holistic. (PFI)

While this program is intentionally designed with "loose reins," allowing learners to make decisions, learn from each other, grow, and learn as the season progresses, the "loose" nature of program structure does present challenges. All learners from this farm noted that although the loose internship structure allows them to understand the ins and outs of farm life, it can also be a challenge to their overall learning. One intern noted, "You're kind of just thrown into it and pick it up as you go, there's not really any formal teaching. We all just kind of have our ways of doing it and show each other, and figure out what works best for you" (PFI). She went on to say that, "sometimes it's difficult because there is no real structure, sometimes that's great and other times we need a system for farm work. There is so much that needs to be done here, sometimes it's difficult that there is no real structure" (PFI).

The immersive nature of the program makes it is easy to fall into the day-in, day-out routine nature of farm work and lose sight of the educational nature of the farm. A participant noted, "It's not so much that it's not an ideal program or a well thought out program, there is just so much to do that sometimes you can lose sight of the educational aspect and what is going on the farm, besides those beets you are harvesting day after day" (PFI). Interns engagement with all of the aspects of living and working the life of a farmer, however, gives a realistic understanding of what farm work truly encompasses. By understanding the frustrations, physical demands, and repetitious nature that farm work can entail, the immersive experiential learning is a way to see if farming is a path that they want to continue exploring as a possible career path.

Farming is just a lot of work, it can be physically grueling and... I think that could be challenging mentally for a lot of people. It's a lot of time just to be out weeding and you're very close to the ground and sometimes you're crawling along in the dirt for five or six hours

at a time. I don't think many people even think about that when they're coming to work on a farm, but that's how food is made here and somebody has to do the work. (PFI)

5.1.2.2 INCUBATOR FARM PROGRAM

Comparatively to other programs looked at, the incubator program has a high level of personal investment for learners, including out of pocket costs, because they are running their own small farm business. However, they are able to reap the rewards that can come from their investments of time and money throughout the growing season as they sell their products in the community. Additionally, many of the learners have work off of farm that can help to offset the level of investment they put into the program. This self-directed structure is attractive to those learners who prefer to learn on their own and reap the rewards or losses as they come. An Incubator Farm Program learner noted that, "Your lessons are your lessons, and you know your emotional response [to those lessons]. Someone could tell you in a classroom, but you don't know how you emotionally respond to that" (IFP).

This type of hands-on educational experience is intensely trial and error focused, as learners make decisions for their farm business, and move through the season working and reworking ideas and ways of doing things. However, it was noted that learning in this manner allows lessons learned to stick more than they would in situations where less is at stake. Trial and error, learning and developing from mistakes, is often the reality of farming. One learner noted that, "I think the real benefit of [the incubator farm] is that you get to make your own mistakes and learn the hard way. And that's farming. Not a whole lot of structure, but you know, I'm not that much for structure" (IFP). Another learner stated that, "Even when something doesn't go right, which is 100% of the time, I pick myself up and I'm going to keep trying and it's not going to be right. I know even the next time I try it's totally not going to be right, but at least it will be better than it was before. And

that's good enough for me" (IFP). Two learners who are both raising chickens at the incubator farm, said of their learning throughout the season,

Yeah, so, chickens are a big learning experience. Definitely getting a coop functioning with chickens inside of it was a really bad idea, but in some ways I really had to do it because I didn't know exactly what the coop needed to be. And I'm learning, you know. This works and that doesn't and I'm intentionally kind of making it up as I go along. (IFP)

The other noted that,

I just think you learn it in a different way. I will never forget being out there in poop water at like 6 am freezing my butt off [moving chicken tractors]. The lesson is in my head now: check the weather, think about the weather. I obviously knew that... But it doesn't stick. Maybe that's just me. It didn't stick so I had to experience it. But yes, that's why I like it, because it's so real to you. (IFP)

There are ways that the Incubator Farm Program works to minimize some barriers that learners face in running a farm business. By taking part in the incubator program and paying a yearly program fee, learners are able to gain three to five years of low cost access to land, farm equipment and tools, a cooler, and wash-pack room. They are also able to receive support, guidance, and community connections from the program manager and overseeing non-profit organization. By doing this, the program allows learners to dive into the realities of building and running a farm business while easing some financial risks and burdens.

Before being able to earn income from their farm plots, learners must find reliable marketing outlets for their products. The program manager sees connecting learners with marketing outlets in the community as one of her primary responsibilities. "Probably the biggest part of my job is marketing assistance. You know, what farmers markets, what restaurants, who should I talk to about wholesale. That's a lot of the stuff that I deal with" (IFP). Since marketing is often a hurdle for these learners, her input and connections are valuable assets. This program manager noted that, "[Learner A] had a hard time because he was new to the area, wanted to

launch a CSA thing, had a hard time really proving to people, because doesn't have these same networks. But with him I was like, you better get yourself to the [Town Hall] Market, because I went there in the spring and no one had produce" (IFP).

All of the Incubator Farm Program learners interviewed noted that marketing and selling was a primary challenge faced throughout the season. On selling and marketing their own products, learners noted that,

I think you always think it's going to be easier to sell. So that was hard, the marketing. I guess I didn't realize how much you have to be a connoisseur of everything. Like a marketing, advertising person, who is also planting and doing everything else for it. And I never really dealt with that side, the advertising. So to show up here and be like, ok, I'm here. Don't forget about me. That's been the toughest part, has just been selling. (IFP)

Another learner who works full time in sales and advertising off farm, noted that, "Part of my goal for next season will be to have a much more robust marketing and sales [plan]" (IFP). Balancing farming with her other work responsibilities made it difficult to create concrete plans of action for her marketing. She said that just to get everything out to her customers was often enough, even if her marketing plan for the season didn't work out how she had hoped. "But you know when you're overwhelmed and you're just like, "Whatever, I did it" (IFP).

Another challenge present for learners in the incubator is the idea of having a limited land tenure for farmers, as they invest a great deal of time, effort, and money into their soils and their farm businesses. One learner would love to see the farm expanded with the possibility of long-term leases.

We've talked about a lifetime. Which would be cool. But it would you know, definitely go into you having more role. Where you could be more of a groundskeeper or train people or have more of a manager role here, which I would love to see. One thing that is kind of difficult as well is planning. If you're thinking you're only going to be here 5 years, the way you plan how you plant and how you treat the soil is a lot different than if I knew I could be here for 30 years. So I think it would only be positive if we were allowed to stay longer. (IFP)

Other learners are interested in eventually trying to acquire their own land after their time with the incubator or to find an intersection between farming and other business ventures. No matter the future path of learners, this incubator farm is helping to fill a gap in educational programming and helping these learners access land and begin their journey into agriculture.

But you know land access is the next question for any young farmer. And there aren't that many good solutions. And there aren't that many incubators. So this is a pretty vital step for allowing people to get into farming without you know having half a million dollars or whatever it's going to take. Or even if you do have that maybe you should come out here and practice before you spend the money and then you can figure out if this is really what I want to do and do I have the skills necessary to make money doing this. (IFP)

5.1.2.3 UNIVERSITY CERTIFICATE PROGRAM

The University Certificate Program requires both a high monetary investment and a high time investment for learners. Monetary costs for this program include tuition, books on theory, practice, and financial management, and cost of living in the area while taking part in the program. These costs can be a barrier to participation for learners looking to apply for this program. The program runs full time for nine months and learners are unable to hold another job unless it is under 10 hours a week. This is a serious time investment and something that has to be taken into account when choosing this program over other options. A farm manager noted that learners are,

Paying \$9000 to come to the program, but they have to pay for cost of living for 9 months. Some people have a part time job but they can't work more than 10 hours a week because then they're exhausted all the time. That's not a reality, or realistic for a lot of people. We have a scholarship fund that can help defer the costs, but that is only the program cost. It limits a significant chunk of the population that would come (UCP).

One participant of the 2015 cohort had to turn down her initial acceptance to the 2013 cohort because of the financial burden of program costs. "The program is not cheap and I was like, "I can't do this right now." And it broke my heart to say no, but I had to work so that I could come here. So I did that and then reapplied and didn't visit my second year because I [knew] I want to be there (UCP). However, despite having to push back her participation and take on the financial

burden of program tuition, she went on to say that “it was worth the money I paid for it.” And that looking into the future, “it saves a lot of money in the long run because you’re not making mistakes, very expensive mistakes, your first year or two of farming” (UCP).

With the understanding that these investments for learners can present barriers to participation, the program staff works to offset the investment required by learners with the benefits and outcomes they receive through participation in the University Certificate Program. Staff integrate learners into all aspects of running a farm business. Each learner creates a personal business plan, is involved in managing a farm plot, takes part in book and recordkeeping, and is involved in all marketing outlets on farm during the program. A program manager believes that this in depth learning that takes place sets the program apart, despite high investment on part of learners.

We have CSA, farm stand, wholesale to campus and all around the state. We are growing a lot of food year round and have a year round CSA, so if people are interested in that, or being a model for their business, they get to experience that here. A lot of places don’t focus on year round growing like we do, so that sets us apart. (UCP)

Despite the range of knowledge and theory learners are provided throughout the course of the program, all learners noted that they do not always have the opportunity to implement everything that is addressed in books and assignments. One learner noted that, “I think they do a nice job of covering things. One thing we suffer from is not getting to certain things. We cover it, we read about it, we had to do an assignment on it. But at the end of the day, we don’t get to use all those things. Or maybe one of us does” (UCP). Another said that she had to put a great deal of effort into getting to experience as many farm activities as she was able. “I made a concerted effort to say, “I want to go here and do this because I haven’t done it and I need to know this.” Just making sure that you can get everywhere and see everything a little bit can be difficult” (UCP). The

staff try to mitigate this challenge as much as possible. A learner noted that “Most of the staff has been like, “We can do that. We’ll either find someone who’s doing that and we’ll get you to help out with them, or we can get you to stay after.” On occasion they’ll actually create a class” (UCP).

5.2 HOW ARE THESE PROGRAMS BUILDING AN ALTERNATIVE KNOWLEDGE SYSTEM AROUND FOOD AND AGRICULTURE IN MICHIGAN?

5.2.1 CREATING SAFE SPACES FOR PARTICIPANT LEARNING

The results of the analysis indicate that each of the farmer education programs create a space that fosters learning in such a way that allows learners to make mistakes, creating paths to knowledge through trial and error and active engagement with and critical thinking about the work. Participation in education programs gives learners the chance to err without taking on the full financial risks involved in starting and sustaining a farm business.

In the internship and certificate programming, learners are able to experience trial and error on someone else’s farm, and staff plan for mistakes and inefficiencies by planting an excess of crops each season so that numbers are met regardless of learner errors. “They build in their 30 to 50% buffer on the crops. You know, so like, they realize it is a teaching farm, and so there’s a little bit of room for error” (UCP). This excess is one way to create a safe space for learners as they become comfortable in trying different methods and seeing the results. A learner noted, “I like the freedom. You learn how to drive a tractor, you learn how to use implements. Like, you get all of those things down. But you also have room to sort of experiment ...They knew not to make it too dangerous, but they let you do that” (UCP).

Staff support and encouragement fosters confidence and comfort in trying new ways of doing things, even if the ways attempted are inefficient or unsuccessful. A learner noted that,

It's like gentle correcting. "And next time maybe do this instead." That makes it easier, I think, to take a risk and try something new. Or, "Hmm, I'm going to seed it this way instead of how they showed me because I think this way makes more sense in my head." And you realize, "Ok that was stupid, they do it this way for a reason, but at least I tried it, and ok, no harm no foul. It wasn't the most efficient use of the seed and it's going to make harvesting a little bit harder, but ok next time I'm not going to do that." (UCP)

Staff flexibility in letting learners take the reins in their education is also seen in day to day work as learners sign up for what they want to be involved in, as they choose from the list of daily tasks. Learners are able to insert themselves in whichever learning areas they are most interested in or haven't yet had the chance to take part in. A University Certificate Program learner shared that, "Because they would line up the board at the beginning of the day and you sign up for what you're interested in doing, and you don't always get it, but if it's something that somebody else has done multiple times, you just say, "Well I haven't done this yet." Everybody was really forgiving" (UCP). During task rotations at the University Certificate Program, a learner showed marked interest in the cows; in his search for more details and information about raising livestock, he was able to take on cattle responsibilities on the farm in order to better learn the management and decision making process.

I actually took on managing the cows this year. I didn't necessarily intend to do that. I didn't come in with that idea, but I like, we all do rotations, right? And so on my livestock rotation, I just wanted to know more about them. So I just started asking a lot of questions. And then [the staff member] was like, "Well do you want to learn how to manage these cows?" And I was like, "Sure! Let's do it." And so he showed me. (UCP)

By giving learners the freedom and flexibility to make their own decisions and work through problems, they are engaging learners, allowing for critical thinking about practice and methods, and letting learners see their decisions through to their results. As one learner stated, "And that's the whole point of the program, they try to give enough instruction, but provide enough autonomy so

that you're making those choices and mistakes. Because you can't learn if you're not making mistakes and able to make your own choices" (UCP). And making decisions and mistakes while on another's farm and in a space where it is accepted and encouraged is beneficial in the long term should learners continue on to their own farm businesses. "I think too, it saves a lot of money in the long run because you're not making mistakes, very expensive mistakes, your first year or two of farming" (UCP), stated a learner.

Decision making is a crucial part of the trial and error process. The farm owner who hosts the Private Farm Internship believes that allowing learners to make decisions and see those decisions through is a large part of learning how to farm, adapting and improving as the season goes on. "I like to put people in the position where they have to make a decision. Even if it's wrong, even if it's inefficient, you know, the idea is that the summer is long and you improve, you grow" (PFI). One learner notes of this learning process that, "It's more just observation; pick it up as you go. A lot of it is just learning day to day. It's trial and error and just figuring it out, a lot of flexibility in that here" (PFI). This system of decision making and learning as the season goes on isn't the typical structured learning environment that many are familiar with, but it does give an understanding of the kind of decisions and learning that happens on a farm. "A lot of the dynamic is just doing it. Doing the work. I think a lot of people coming in, some of the interns come here to learn, or at least have the idea that they're going to be learning specific things" (PFI). Another learner noted that, "It's learn as you go. Organized chaos" (PFI).

Incubator farm learners, while also learning through trial and error on their own plots of land rather than that of others, are able to do so because the incubator organizers take on the burden of cost often faced by those who run their own farms. Land, equipment, and other infrastructural costs are all necessary to run a farm business. Those financial burdens can make

farming a difficult profession to enter. “[The incubator farm] is a huge stepping stone. I wouldn’t be farming on my own if it is wasn’t for a farm incubator program,” one participant stated. “I would probably be working at someone’s spot who was getting old and might give me the land” (IFP).

By removing that burden of cost of beginning to farm from learners, it gives them a great opportunity to practice and learn skills as they progress through the season. Whether learners have come in with many years of experience or are new to farming, they have an affordable space to farm and try to make a go at a running a small farm business. A learner who came into the incubator with little to no experience stated of the season, “But I learned a lot. Which I think puts me in a unique position from the other farmers because they're like “I want to [start my] business today” and I'm more like, “Yes, I really want to [start a] business but I’m more here to learn. I want to learn, I want to get it.” (IFP). Another learner who had a bit more experience before entering this program sees the incubator as a way to get into agriculture without taking on a multitude of expenses. “I really wanted something where I could dictate my own hours and take my own risks and get my own reward. But this was really my only good option. Because of the capital expenses of getting your own tractor and all that nonsense is outrageous. It’s been a proving ground, and that’s what I wanted” (IFP).

Mistakes made by Incubator Farm Program learners are felt at a higher level than those at other farms because of the increased investment in the end product, both financial and emotional. For one learner, that investment was the key to learning.

So for me it’s a lot more error than trial. But I think that when you make a mistake you feel it and you learn from it in a way that you couldn’t learn if someone just told to you. And there’s even things that people told me that I mentally logged away and was like, “That’s a good thing to know.” But until you’re experiencing it and doing it, I just think you learn your learning is so much richer. (IFP)

Another sees his monetary losses due to mistakes and misplaced efforts as the reality of agriculture.

I started the year trying to grow vegetables and that was not smart. You know, and I worked really hard at it and basically spent a lot of hours and got bupkis from it, or nearly so. Well I certainly lost money when you looked at my seed costs and stuff like that. So you know, that was hard. But you know I think again that's farming and that's the cool thing about [the incubator] is that you get to make those mistakes for yourself. I think that's a good thing. And we'll see if these chickens pay out. (IFP)

The investment is greater for learners at the incubator farm program, but so are the rewards. And those outcomes are wholly their own, for better or worse. One learner believes that learning through trial and error and working through the decision making process allows learning to happen at a deeper level because of "the emotional response piece." She went on to say, "And that's broader for life, right? I now understand myself a little bit better because I see myself react to things at the farm" (IFP). What is learned is more than just farm skills, it is also lessons about pushing through challenges, self-development, and strength finding. "What's the best part? I think proving to myself that I can do it" (IFP).

5.2.2 ON-FARM COMMUNITY

The results also indicate that creating a sense of community on-farm was an important part of facilitating a space for learning. In each program, however, this happened differently. This creation of a sense of collective adds another layer to the building of a safe learning space, but also helps work toward skill building for the future, whatever the next steps may be.

In each program, participants indicated that community is a part of agriculture, even though work on farm might be done individually. The director of the non-profit that oversees the incubator states, "[Our organization] believes it's really important to see farm work as a collective endeavor as well as an individual endeavor" (IFP). "Farming as a culture is very community based" (UCP), as one participant noted, and the importance of community comes through in how programs are structured as well as how they work to build a sense of community on farm day-to-day. As that

community is built and strengthened on farm, it sets up learners with a foundation of peers who can later provide support, resources, information, and community connections as they delve into their future work endeavors, farming or otherwise.

5.2.2.1 GROWING COMMUNITY THROUGH A LEARNING COHORT

The cohort model, or group of peer learners going through the program at the same time, that organizes the University Certificate Program plays a significant role in participant experience. “I think [the cohort] is the entire program,” (UCP) noted one participant. She believes this is not simply because of the proximity of learning and working full time with these other people, but that the cohort is diverse in their worldviews, experiences, and future goals. She continued:

I think everybody comes to it, you know it was interesting because you’d think that everybody is coming to it from the same place you are. [Another participant] and I would talk about that a lot. You thought you’d meet super like-minded people, and I came into this cohort and we were all from such different walks of life, and coming to it for different reasons. But I think that that’s the entirety of it. (UCP)

While a critical part of the program, the building and maintaining of a culture centered around community is not without its challenges. All interviewees from the University Certificate Program noted that throughout the program there were some tensions that developed because of differences in personality, but this didn’t seem to take away from overall program experiences or the sense of community and the importance of that to learners. “I just think because there were so many different people from so many different walks of life here, very diverse walks of life and ages and life experiences and all sorts of things. For some particular reason that particular mix took a long time for people to figure each other out and mesh” (UCP). The reality of weather conditions throughout the season also plays a part in tensions on farm. One learner shared that:

There are lots of different personalities going into the farm. Especially, I mean I feel like this year we have a lot of people who are on a certain level and they don’t mesh well with others. And you have to learn to deal with that. And in the heat of summer and you’re

dehydrated and it's 95 and you're not doing a job you want to be doing with someone that you know, it feels like they're slacking or they feel like you're slacking. (UCP)

Despite how seasonal conditions and long work days can play a part in escalating tensions, adverse conditions can also serve to strengthen personal ideas about what role community serves on a farm, and why it is important. A learner noted that,

You're with these people day in and day out it can sometimes be uncomfortable conditions, you know, we had a really wet spring and that brought a lot of mosquitoes, and now we're harvesting and being eaten alive and you're spending a lot of time with these people and if somebody gets on your nerves it's very easy for that to pick up really quickly. But in the same sense, it makes you get a little inward, and you know like you can't work by yourself all the time. And I think that that's exercising a muscle that everybody needs to exercise in their life. (UCP).

Pushing through struggles and hard conditions could bring about tensions on-farm, but also served to bring the cohort closer together. Another learner relayed an anecdotal account of one such time the farm crew came together by pushing through an exhausting day. This only served to strengthen their sense of community:

I think one of my favorite days, which was a ridiculous day, was a bunch of us came in on a weekend in July because all of June it hadn't rained and so our planting dates were super far behind and we had like a window where it was going to be dry. "Like ok, we got to get all this stuff in!" But we took a twelve hour day that Saturday. And I was expecting that we were only going to be there for like four hours, right? And then we were there for twelve hours! And I was hot and tired and pissed off... but like, by the end of the day when we were all on the water wheel transplanter transplanting those last plants we were so wicked tired from not eating and being thirsty and just from being up for so long that we were dancing and throwing plants in. It was just feeding off of each other's energy, right? And then staff went and got us all beer. We just sat in the back of the truck and drank beers. It was like, at the end of the day when we were done with that it just felt really good to accomplish all of that and it was fun. Because we were all together doing that. There were multiple experiences not quite to that intensity, but that just reminded me of how important community is and how important having those people is. It's just that in my future farming endeavors how much it's going to mean to me to create those kind of connections, so that you have those people to fall back on and rely on, either who are actually physically there with you or just emotionally when things get really tough. (*Laughs*) When you have to pull a twelve-hour day and not eat to get stuff in the ground. In July when it's ridiculously hot. (UCP)

This sense of community and cooperation develops in field, as learners and staff work, talk, and laugh together. One learner saw the importance throughout the season of “people who really understand being a part of community.” He went on to say that “Competition is going to happen within this, but it’s also a very cooperative environment” (UCP).

And I think the first real fun memory I had was like our onion planting in the spring. And just everybody out there, everybody on their hands and knees, like dirty. And that’s when those conversations between fellow students and other staff start to kind of get to know each other. And so I remember it as being fun and I remember it being the first time we really built a camaraderie. (UCP).

Camaraderie that is sustained throughout the program can often extend into future work. All learners interviewed from the University Certificate Program noted that they will be leaning on the network that they have established through the program. One said of important things taken away from the program, “I mean the people, my cohort members. I don’t expect to forget any of them. ... And I have plans to go into business with [a cohort member]” (UCP). Another sees the cohort as a way to build her future farming network, “I think other people in the program too, who live where I’m from, who I’m hoping to stay in contact with because we’re going to be farming in that area too. They’re part of that network” (UCP). One learner was already putting those cohort connections to use as she planned for the coming season with her own operation, “Now I’m relying a lot on some of my cohort members to get this production up and running. And you know texting another cohort member who has things kind of already ramped up and going when I have questions. It is invaluable” (UCP).

5.2.2.2 WORKING AND LIVING ON-FARM: INTENTIONAL COMMUNITY

By creating an intentional community on-farm, the Private Farm Internship farm builds the farm community in a way that is distinct from the other two programs. This structure of intentional community on-farm developed gradually as the Private Farm Internship evolved through the years:

interested workers were looking for housing, and the farm had extra space. This program also attracts a lot of people who are in some sort of transition in life, whether between jobs, school, or searching for something new and meaningful, so the availability of housing, especially with the farm located in a rural area, is a significant bonus for those interested in learning farm skills. “Because we are so far out it’s impractical, and people would want to live here as well. And it turned out that many [of those applying]... were in transition. Lots of in transition people” (PFI). Because of this requirement for living within the intentional community for those taking part in the internship, farm owners place a great deal of thought into the people with whom they choose to share their farm, family, and house. “This is our livelihood,” (PFI) one farm owner stated. When looking for interns, “what was important was whether they had a skill set that fit our program. Which was: endurance, self-initiative, the ability to work independently” (PFI). She continued:

You know, positive people. And part of the work is the work, but we live together. And the living together dynamic can be extremely inefficient in a field. Because people are struggling with their interactions. And if they’re likeable people and they’re trying to be friendly with other people, they tend to really build each other up instead of start getting negative and start complaining about each other. (PFI)

The on-farm intentional community offers a unique setup for learners interested in farming, however this arrangement is not without its challenges. One participant who was coming from a more isolated living and working situation finds that, “It’s been challenging to get back into this community frame of mind in a lot of ways. Socializing and communal, being on-farm, things are rooted and people are a lot the same way and at this point my roots are pretty shallow and I’m still trying to learn how to get more deeply rooted” (PFI). Another says of the intentional community on-farm, “I think it’s great, there are definitely times where it’s frustrating and you just have dreams of having your own apartment again, but overall it’s been a really fantastic experience and you get to

know this group of people you work with and are with every day on such a personal level, and I think that's really special" (PFI).

This farm brings together a diverse and interesting community. One farm owner commented on how the work brings people together, saying,

The thing I find most fascinating is how age is a non-discretionary thing. They become friends with people they would never have been friends with before. Who are from different socioeconomic backgrounds, different gender preferences, different political interests, different ages, different religions. I mean they're just, their common core is that they are either very passionate about food or the organic thing or you know there is something, the common thread is that they are working on this farm. And these, there are there is never a year where a lifelong friendship has not been a byproduct of just learning about farming. (PFI)

Learners noted that living with so many different people has been a benefit of farm life and a learning experience. "It's really cool to see the different people that are, it attracts people from all walks of life, and most people are in transition figuring out where they want to go next. It's cool to hear people's life stories" (PFI). Another said that, "I think another aspect of living in a community is so rewarding because you are immersed in a diverse assortment of people. It can be very hard and rewarding at the same time. It has little to do with farming but a lot to do with life" (PFI).

The lessons being learned through this farming and living situation do extend beyond farming skills and knowledge. "This is a community of people that live and work together and some of what we're doing is farming, but the other part is learning how to live with people. And that probably in my opinion is going to be something they are going to take with them more than they are going to take farming in some ways, you know" (PFI), a farm owner noted.

5.2.2.3 THE INCUBATOR EXPERIENCE: COMPATRIOTS AND MENTORSHIP

With the incubator program each learner runs their own business, and most balance farming with another full time job throughout the season. Because of diversity in schedules, the incubator program could easily function without building community or a sense of collective in farming endeavors. However, program managers work to intentionally and deliberately build a sense of community on-farm. “So it's not just “Oh, I rented this land and I'm just going to be a tenant farmer.” You know, we're helping you to grow your knowledgebase as well as helping you grow your business” (IFP), said the program manager. They do this through regular farm gatherings, potlucks, work days, and other such activities where all farmers can be brought together. The director of the non-profit running the program sees how building the community on-farm translate to bigger picture of these learners continuing on in agriculture,

And we're really trying to create a community, a collective community that also looks at the bigger picture of beginning farmers in Michigan's food system... The sense of what are you doing for the group and what are you doing for yourself. And part of this is based on our belief as an organization that most beginning farmers won't make it by themselves. That it's just too darn hard. (IFP)

To concretely build community on the farm, the farm manager says that, “So we do the workday and we have meetings and potlucks. It's kind of an airing of grievances but also a social time where we get to be a more cohesive space. So it's not just like I'm over in my field doing whatever I want and you're over in your field and we don't ever talk to each other” (IFP). In addition to the monthly work days and other gatherings of learners, there are additional strategies on-farm for building a sense of collective in the shared space. “We have a time bank, so if you mow the lawn beyond right in your area, you put that time into the time bank and it reduces cost for say, your equipment use. So that there's some give and take” (IFP). Learners can offset their program

fees by increasing the time or skills they give to the farm collective outside of scheduled group work days.

As learners stay on site for multiple years, there is an expectation that their role will evolve, that they will take on more responsibilities or add their knowledge and skills to help with farm improvements in a way they didn't previously.

The longer one stays there, the higher the expectation of what one will do for the collective. So if you get to three years and you want to stay, what are you going to do to make this a stronger farm? And is there some talent that you have? Gary is a great example. So Gary has been there the longest, and Gary is really good at fixing equipment. And part of his work, I mean he'll find us parts and he'll actually do some of the repairs. Well that's a huge contribution to the collective. So to me, as that length of times expands, that giving back or that contributing to the whole is where I currently am strategizing. (IFP)

In addition to what is being done, the farm manager would like to see the program evolve to host workshops on site. She believes that offering educational workshops would add another layer of community connection to the program; so that, together with other actions already being taken, the farm continues to be more than just land for individual use. "Because otherwise it just becomes a place where you're renting a plot and that's it, you don't really have the connection to it" (IFP). "Yeah, I would really like to do monthly workshops, educational workshops that are open not just our farmers but also to other farmers in our community. I would really like to see that" (IFP).

The learners at the incubator aren't operating in isolation, but are rather sharing their journey with others on the farm through conversations and working side-by-side. A learner noted that, "There are all these cool other people who are doing it all beside you. It's nice to have compatriots. Trying to figure out the same things. Or different things" (IFP). Another said that, "I think it's an incredibly supportive community" (IFP). Their support not only comes from the sharing of space and information, but also the small things that others have done to assist her day to day.

“[He] caught my rooster for me” or when she has to be away from the farm for a few days, “[another participant] will peek in on my chickens” (IFP). For those new to the area, the farm also offers a community of peers and brings about friendships. “I think that the camaraderie has been really good for me. Because I’m not from around here and didn’t know that many people. So having a place to come and get to know other people is always nice” (IFP).

There are many diverse methods used, crops grown, and philosophies of agriculture that learners bring to the program, and the farm manager notes that the diversity is an asset to community on-farm.

I want it to be diverse because I feel like that’s the only way people will actually learn from each other. Because if everybody is doing the same thing then why do they need to help each other? It’s just, they kind of space out. Whereas the other one, it’s more learning. People can learn beekeeping instead of just growing their cabbage or I don’t know, whatever. (IFP)

5.2.3 KNOWLEDGE SHARING AND CO-CREATION OF KNOWLEDGE ON-FARM

By creating spaces that build community between learners, create safe learning spaces for learners, and encourage trial and error, critical thinking, and engagement in knowledge building, these programs support co-creation of knowledge within an alternative knowledge system. This knowledge system can be seen on all farms in many different ways. Through co-creation of knowledge on-farm, learners share and develop knowledge with peers and staff alike, working, learning, and developing knowledge collaboratively.

The sharing of knowledge and experience between learners is one way these programs bring about new ways of thinking, help to shape knowledge within the program, and become a part of the farmer-generated knowledge that is at the heart of the alternative knowledge system. Knowledge is shared between learners as a way to assist and strengthen their peers, and everyone

has knowledge to share with others. A first season farmer at the incubator program related one such story of learning from others on the farm:

Farmers are really supportive and they tell me often things that I'm doing incorrectly in a very loving and wonderful way. Just on Sunday I was trying to... make this giant like chicken run. ...Because I cause feel really bad when they don't get to really run, and right now their run is 8x8 for four of them. So I'm building it, and I'm killing this construction. Boom boom boom, screw screw screw, I am a badass lady. And [another farmer] just comes by and is like, "you know that will never hold the snow, right?" And I was just like, "uh... uhuh, I knew that, this is just a practice." He was like, "You need to unscrew all of this and like make a frame for your roof. Like, you can't just put metal roofing up and like nothing structural underneath." I was like, "No, but it's bolted in on both sides." And he's like, "Yeah, but it's going to pool in the middle and it's gonna break." And I was like, "Yeah, I see that now. Thank you for pointing that out. I also thought of that theory... I will be unscrewing this. Thank you." (IFP)

Her peer learner didn't take over the construction, nor did he stand over her shoulder and direct every step; rather, he took his own past experiences and construction knowledge and pointed out what might be problematic, and suggested an alternate option available. By sharing his personal knowledge, he was able to strengthen the knowledge and understanding of another learner.

While there is conversation and sharing of ideas, talents, and personal resources on the farm, there is room for growth in that collaborative community. One learner would love to see more collaborative learning and knowledge sharing happen throughout the program. The learner noted, "I think that we need to utilize our resources here a little more. Like, human resources. I think there's a lot to learn from everyone here. And I'd like to see that form open more, where people are more comfortable with coming over and being like, "hey, what are your practices, what are you doing?" (IFP). As the program manager at the incubator notes, "Farmer community. It's one of the best ways to learn" (IFP). She has seen the benefits of farmer collaboration and knowledge sharing at the incubator,

Looking back at a lot of the old documents [shared by past farm managers]... things that they had identified that were most successful were farmers that worked as peers, or people

that collaborate on an equal playing field. Like, I'll help you with this and you'll help me with that. For example, me and [Farmer A] we started doing a labor trade. Where I was helping him harvest his ground cherries and other stuff, whereas he would help me make salsa in the kitchen. So lots of things like that. And then you know, [Farmer B] has a bunch of cabbage left over that didn't get sold to [his wholesale account], [Farmer C] bought it at wholesale price to feed to his chickens. So there's a lot of things like that. Or you know, I buy eggs from [Farmer C] now.

While this knowledge exchange does happen on-farm, one incubator program learner would like it to become a larger part of farmer interactions on site. "To be able to open up to where it'd be mostly through a time bank or labor trade kind of deal, where like, as I'm doing stuff for you, you are telling me why and how and stuff like that. So. I mean I've never really cut salad mix, but I'm sure that [one farmer on site] could show me some things, some little tricks that would help me" (IFP).

The sharing of knowledge and being receptive to other's knowledge and experiences does take a certain amount of openness and willingness to learn from a variety of sources. One participant was hesitant in asking others for assistance, although sources were readily available and willing to help.

That is an area of development for me, like asking another farmer "Can you show me?" ...It is a major impediment because I didn't know how, like I don't know how to use the tractor, but I'm also afraid to ask someone to show me because I don't want to inconvenience anybody. I don't want to be a burden but I don't even know how to use the stupid thing to like clear my ground. (IFP)

Without openness and a bit of initiative in order to gain specific knowledge, roadblocks can stand in place of open pathways.

From the University Certificate Program, one participant sees how collaborative knowledge serves to enrich the learning experience.

That's the cool part about programs where there is collaborative learning community, because you're not just learning from the people who are instructing, you're learning from

the people that are in your group with you. Everybody comes from so many different places and have variety of experiences they've had throughout their lives, which can make learning very challenging, but is also a better learning environment. A richer learning environment. (UCP)

Knowledge on-farm comes from many sources, from the land, staff, and other learners. One noted how important it was to be open to multiple sources of knowledge:

I guess I would just say to be open to learning in unexpected ways or having learning coming from unexpected places, from people. Like, not discounting somebody because you think they have nothing to teach you because they have less experience than you in whatever area. Or not discounting someone because they have more because they're too above you or whatever. Because something that I found that, just I was very surprised at the things that people taught me. Just in conversation or just working with them and seeing how they do things. Whether it was about actual farming things or just how to be a human, you know? (UCP)

This was seen by others as well, a University Certificate Program learner said that, "I was in charge of the farm stand garden with [Name], who had worked for organic farms for five years and was very educated. So it was great because I could learn from her a lot, you know" (UCP). Through the Private Farm Internship, being able to learn from those who had worked on-farm before was a valuable tool to build skills and learn various practices. One participant said that,

Last year there were two girls that have been here three or four years. And a couple more that have been here a couple years, one that has been here eight years. A lot of people have returned for multiple seasons so I tried to ask them many things so I knew what was going on and what the right way was, so I learned a lot from them. It was nice because now, there aren't many returners, and the people that have returned have only been here since last season. (PFI)

Even from those who were new to the farm had valuable information to share. "Yeah, one of the guys who worked here earlier in the season was really interested in plants and how they grow. He would talk a lot about that which was really interesting; otherwise we wouldn't have gotten how different plants are related or species" (PFI).

Just as learners share knowledge between themselves, knowledge is also co-created. This co-creation differs from knowledge sharing in that knowledge is not held and distributed by one individual, but rather shaped and formed through a collaboration process of exploration and openness to new ideas. One learner notes that this process of learning requires open communication and discussing between those on-farm, “there’s a lot of back and forth. Chatting,” he said (IFP).

A farm owner with the Private Farm Internship sees each day as a new day to be learning in collaboration with each other and with the environment. “It’s just careful examination every day, like the direct perception of those things you know. And just saying you know here’s this original day that we have, that had this much temperature drop last night, is this stuff still good, what do we have to do to thaw it out?” (PFI). As the season progresses and changes, so do learners in their knowledge and abilities. “It takes me a long time to figure those things out. So, to have the time over the season to figure those things out or just to be with other people and be able to watch and observe other people and see how they do things” (UCP).

By trying new methods of doing things and working through problems together, learners and staff can discover new ways of doing things along the way, regardless if there was already an established method being used at the time. These sites allow for creativity in practices and working to innovate and see where improvements can be made, as farmers have done for thousands of years. As one participant noted, “I find that fun because it just seems like there’s a lot of people trying new things. There’s a lot of innovation left in it. Which is amazing because we’ve been doing it for, you know, thousands and thousands of years. And there’s still room for progress” (UCP). A farm owner says of this trial and error way of progressing and learning through the season, “It’s all

part of it to, you know? In the way childrearing, you know kids may learn to make decisions by making bad decisions. We learn here on the farm how to be efficient by being inefficient. And supporting one another with that sort of beginners mind every time” (PFI).

That openness to inefficiency and error has made a lasting impression on one participant. He said of that freedom in experimentation, “But you also have room to sort of experiment. So like, this year on our tomatoes. We trellised a couple different ways. And some of them were just terrible – I would never do that. But like, they let us do that. And it still produced, they still fed their CSA members, like they knew not to make it too dangerous, but they let you do that” (UCP). He relayed another story of how this co-creation and experimentation comes up day to day on-farm:

You know how we do the brassica salad mix? And it’s four different varieties. I just for some reason, I could, I didn’t know how they planted those and it didn’t register to me that we like do one strip of this, one strip of this. So I just did it all the seed. And planted it. And I like ran over to [a member of staff] after I was done. I was like “Something about labeling this bed is not working.” So I ran over to her and I was like, “I messed up. I like totally screwed up.” And she was like “Ohhh noooooooo!” And then she like started laughing. And she was like, “It’s no big deal. We’ll see what it does. And maybe it’ll just create a killer salad mix and we can just harvest and throw it.” (UCP)

Whether or not his method of seeding was adopted, the cohort and staff were then able to see it through, analyze what best practices look like for that mix, and decide how to move forward. Should it have created a more efficient system, then they had a new method to practice and teach. If it was a hassle, nothing was lost through the practice and experimentation.

“You know we’re sort of in the washing machine together, we have to work it out,” (PFI) a farm owner noted. Knowledge and learning doesn’t move top-down, but rather horizontally as they all are equally engaged in the process of learning throughout the season. As knowledge is generated and shared among peer farmers on site, through having spaces where community is developed and

experimentation in practice is encouraged, the alternative knowledge system is enhanced and continues to grow the sustainable agriculture movement.

Within knowledge sharing and co-creation of knowledge, a time set aside for reflection on the process of knowledge gaining is present at each case site. The intentional setting aside of time for thought and discussion, either within the peer groups or one-on-one with instructors, allows space outside of the everyday routine to take a step back, analyze and think about their goals, further interests, and how the program can best serve their needs as learners.

Within the Private Farm Internship hosted, dedicated time is set aside for group reflections each week. Every Thursday throughout the program, the cohort takes time after lunch to sit down and have conversations about how the work is going. This space is reserved for questions, concerns, and conversations that aren't able to be had when working in the field and trying to meet deadlines and make sure work is done on the farm. In addition to the Thursday afternoon reflection time, morning meetings are held each work day before the day begins as another way to create an open space for questions and comments about what is going on and what else the learners would like to know and focus on while taking part in the program. In a less structured way, the daily shared meals on-farm create another space for relaxation and open communication between those on-farm.

At the Incubator Program, the learners and farm manager gather together at least once a month for a farm work day, potluck, and group meeting. This establishes a time where everyone is together on-farm and can discuss anything that might need to be addressed by the larger group. The farm manager says that she started these gatherings to help in "making the farm both an educational space and also collaborative... So we do the workday and we have a meeting and pot luck. It's kind of an airing of grievances, but also a social time where we get to be a more cohesive

space” (IFP-fm1). These gatherings not only allow for community building, but also open the space for in-depth discussions about the role of the farm, the learners, and the work.

Finally, within the University Certificate Program, there is time that is set aside for learners to meet with instructors throughout the program to assess their progress, evaluate goals, and make sure that any questions or concerns are being addressed that the learners might have. One learner was able to use the one-on-one meetings with staff as a way to help reflect back on learning goals and begin to prepare for her future endeavors. She noted, “We have advising meetings over the course of the year where staff check in with the progress of our plan, our personal learning plans and goals we set up with ourselves... (UCP).”

5.3 WHAT ROLE DO FARMER EDUCATION PROGRAMS PLAY IN THE LARGER SUSTAINABLE AGRICULTURE MOVEMENT?

5.3.1 BUILDING A COMMUNITY OF PRACTICE

As learners take part in these educational programs, they are becoming part of a growing base of support for regional, sustainable food systems. For those who will continue on in their practice of and learning about agriculture, programs work to help them become part of the larger community of practice of sustainable agriculture in Michigan. “It’s hard to farm without a team and a community of people” (PFI), noted one learner. By building their agricultural networks, programs are helping to secure resource and knowledge bases for learners as they advance on from the program. Learners shared the importance of working to build their networks outside of the programs because those who are agricultural practitioners in these communities are a wealth of local knowledge that can be shared with and utilized by learners.

5.3.1.1 FARM VISITS

Each program helps connect learners to a greater community of practice in regional sustainable food systems in various ways. A University Certificate Program manager shared that they take learners on-farm visits throughout the season to help build the community of practice for those learners who continue on to farm after finishing the program.

The best way to teach people is to take people on other people's farms... Everyone is really amazing, and share so much information with us. It's a way for people to connect with existing farmers out there for future employment or just to collaborate with them to pick their brain.... The people that are running businesses out there are the true innovators and we've always thought of ourselves as a resource, but I also think that they're a bigger resource. So building and strengthening those relationships are good for our program and people who are farming in Michigan. (UCP)

Learners at the University Certificate Program saw the benefits of visiting farms throughout Michigan for current and future learning.

I'd say fifteen, twenty different farms that we got to go to. It's also cool because there's so much room for creativity, ingenuity and is neat to see that display from all the different farms we went to. And then all the different skills and marketing avenues and all these different people are doing the same thing but different, and are making it work.... Most people are connections, resources to ask questions of, and they were very open. Like, they just gave us tours of their farms and we could ask like whatever questions. So we talked business, we talked labor, we talked finances - everything. (UCP)

Another noted that,

The farm visits, where you are meeting people who are actually doing it. And having that, I do feel that that is part of the community, I haven't utilized it yet. But I think if I reached out to one of those farms and was like, you know I was part of the [University Certificate Program] cohort and I have some questions, they were all so engaged in wanting to expand that community. You know, that I would have no problems finding someone to respond to me with answers to my questions or resources or, I feel like it sets you up with an endless amount of resources to tap into when you need them... So I think that's an invaluable thing to get out of there. It's a network of resources. (UCP)

Commenting on the wide reach of community of practice around farming in Michigan he had witnessed during his time with the cohort, a University Certificate Program learner said that, "I

don't know how farmers do it. But farmers usually find each other. They're all like, "Oh yeah, I know that so and so owns a farm in northeast Michigan." And you're like, "How do you know that? You farm in southwest Michigan!" "Yeah, he's the potato guy." I think they cross paths somewhere" (UCP). Being able to connect into this community of practice during the program assists learners in the future as they build networks, learn regional information, or even find work. "I mean in terms of networking. Cause [the farms] also plug themselves usually. They're like, "Hey you know, we have a couple positions open for next season." Which is nice"" (UCP), a learner said.

5.3.1.2 CONVERSATIONS AND SHARED MEALS

Within the Private Farm Internship, a way that learners start to connect into this community of practice is through dinner talks one farm owner organizes throughout the season. These talks are on a host of topics selected by interns, and are geared toward information they might not be coming across on-farm. Farm owners reach out to those in the communities who are experts in or practitioners of these subjects and invites them to come on-farm to share a meal with the interns, talk about their expertise, and answer questions the interns might have. A farm owner said that:

At the beginning of the season we ask all of our interns, "What are topics that you came here hoping to learn?" From maintaining a farm vehicle to sharpening a knife to beekeeping to seed saving to uh permaculture or composting. We get that list of topics together, through our resources and network of people we just know... We offer dinner and free produce to these people we know to come and talk to a group of very enthusiastic 4-8 people that might want to learn about any of these topics. And we have a dinner talk is what we call it. So in the evening once a month or twice a month we'll have a dinner talk to extend that experience beyond. (PFI)

Not all interns join in dinner talks, but they are offered as a way to connect to the community as well as learn more. They started these talks as a way to reach all sorts of learners and add additional educational opportunities for interns. "I recognized that as an educator that there are many kinds of learners and I would like I like to provide that for people if we can and so we, this was

kind of our way of adapting to that need of having a lecture type thing, only it's more of an interactive type of thing because it's more informal" (PFI), said a farm owner of the Private Farm Internship.

The connections the farm holds in the community also serves as a way learners can connect to the community of practice. A learner shared that in her time with the program, she has seen the community connections held by the farm owners. She said:

We are connected to a lot of people, businesses and places, and it always amazes me how many people pop in on the farm from people who have worked here years ago to the neighbors who will come to a pizza night or dinner. When we go out, [the farm owner] seems to know basically everyone there so it's really cool to see how connected the farm is with the community and even further than [that]. (PFI)

Another has seen how interconnected the agricultural community is in their area. He said, "[The farm owner] has been in [this area] for a long time and has a lot of connections" (PFI). However, becoming a part of this community is dependent on how much learners want to be connected and involved. Another learner shared that, "It depends on how much you want to be, they are very much willing to connect you to that, and [the farm owner] is always keeping us apprised on what events are happening, it's just how much you want to be involved or connected" (PFI).

One farm owner sees the building of that community is an important role they play as farm owners. "It's been our way in which to develop relationships long term for people to relate to this place, or if they leave and start another business, they still come back here for resources, you know some just for conversation and some for more than that" (PFI). These connections in the community are a valuable resource the farm has to offer their workers. "They are a good connection to have," (PFI) one participant noted.

5.3.1.3 FELLOW LEARNERS AND COMPATRIOTS

Unlike other case sites, learners at the incubator farm program are actively a part of the agricultural community of practice as they grow, market, and sell their farm products in the community throughout the season. Therefore, not only are the fellow incubator farm “compatriots” part of the on-farm community, but are also a part of the larger farming community of practice as they join in agricultural work within their region.

Learners and farm managers alike mentioned how receptive practitioners in their community are to other farmers and farm businesses. The farm manager said that,

I feel like with the sustainable farmers, everybody just thinks about like oh it's so competitive and there's only so much reception to the CSAs and blah blah blah blah, but when it gets down to it, everybody is much more community oriented... [Conventional growers] look at everything as market share, but [small sustainable growers] are still kinda naïve thinking “we're still growing and producing for community.” You know? It's more of the joy. Less the profit motive. (IFP)

She mentioned there are small ways that farmers demonstrate this communal nature of agriculture in their area. “A lot of farmer kickbacks I call it. It's usually the farmers market, where the trades happen at the end of the day, um, or you just have somebody be like, “here.” Yesterday or Tuesday, I was at market and someone was like, “here's these corn tortillas I just made them this morning. Here you go.” Not expecting anything in return, that's just how it works” (IFP).

She encourages all learners to take part in that community as much as possible because there is so much to be learned from those who have been farming for years. “The farmer community. It's one of the best ways to learn. And another thing I encourage a lot of them to do is to talk to others, because there are a lot of farmers around here that have been doing it for a while” (IFP). One way that farmers in this community get together to build networks and exchange ideas is through farmer beer nights throughout the season, “What's been super cool about the farmer beer

night is that it's very intergenerational" (IFP). The agricultural community also hosts farmer potlucks, and some farms host workshops or other such educational demonstrations that can bring together farmers from the area.

As a member of this community of practice and a learner at the incubator, one participant sees the benefit of cooperation among farmers, especially new farmers. He would like to see this cooperation increase, especially between large scale and smaller scale operations selling at farmers markets. "So I would like to see, like, we don't need to be beating each other up. I would like to see farms come together a little more. You know, there's enough, there's more than enough market out there, that it's not oversaturated... But, you know, some cooperation would be something that new farmers should think about (IFP). Another participant would like to see the incubator increase community visibility and support. She noted, "I'd love to see more community involvement and awareness. I would love to see more workshops happening [here], more community support" (IFP).

The non-profit director believes that being a part of this community of practice is important for all farmers, especially those who are just starting out. "Even if you go and you buy your 20 acres or somebody gives it to you or you have a family member, you are still part of a system... And I just think that we tend to see farming as a solo activity, and that transition to be able to actually help beginning farmers be successful means that that human side has to be integrated into this work" (IFP).

5.3.2 EVOLVING TO MEET LEARNER NEEDS

Since their inception, each of these case sites has gone through changes and evolution from where they first started, in order to better meet and serve their learners needs and educational goals. A farm manager and program developer with the certificate program noted that,

So initially, we wanted to attract people that want to start farming businesses and now we want to meet people where they are at and mentor and guide them in a way that is going to be more useful for them. So now we are focusing less on business planning unless they're starting a business, and for the other people we are trying to hone farm management skills so they can be a competitive candidate for the different farms that are looking to hire managers. So that's been an evolution for us, learning and observing depending on what kind of people are applying for the program and what they end up doing afterwards. (UCP)

They are tailoring the program to be applicable for how learners are planning to move forward with their careers. Whether farm business or other work, they want to make sure that learners are gaining as much from the program as possible.

The Private Farm Internship has been seeing a shift in the roles of interns on-farm, especially in wanting to keep interns on for multiple years, as they are the backbone and strength of the farm. "So it's a question of community versus internship versus... the responsibility that [interns] are able to take. We've been increasing more in employees and not having as much of an internship" (PFI). When it started, the internship filled a role on-farm that was needed in the community and on the farm in equal measure. The farm was in need of extra help throughout the season and they were approached by various community members, some who had an interest in learning organic agriculture and others who were in need of a place to live or work. As the years progress, the farm owners continue to evaluate those needs in order to help the program evolve into the future.

And I guess I just come back to it every year, it's like, is this interesting enough to be continuing with, or do I need to look at another area. It's hard to slow down in some areas or bow out in some areas. Cause it's a lot. It's a lot of different moving pieces. And you're asking people to try to figure it out. You know, so I don't know if the pipeline for people coming out here, how that's going to keep going. (PFI)

When the incubator program started, it was imagined as a space for learners to start CSAs. Learners were also expected to have a certain level of farming experience coming into the site,

“Previously they had a very involved rubric [for application] that was very much based on how much experience have you had on-farms. Do you have educational background, do you have farm background, volunteering, etcetera, etcetera, family. (IFP). Within a few years of the program launch with this model, the incubator had very few learners and the nonprofit it fell under was looking to close the farm program. The current nonprofit that oversees the program took on the farm from the previous organization, and reevaluated what the community needed in an incubator farm. The director of the current nonprofit said:

I would say prior to [our organization], one of the sort of significant shift, is that [the site] was a very structured incubator of, you’re at a certain spot, you have a business plan, you know how to grow, this is really a space for you for two years to get your business up and running. And then to go and find your own space. We’re learning with the new farmers and because we have so many more, and such a wide range, from folks that are in that category of really ready to having their own businesses, to folks who are saying I have a business plan, they still have to have a business plan, but I’m not as advanced as some of the other farmers there, and I want to see if this is the business I want to go into. So we’re being a little bit more liberal with the level of expertise that someone needs to have when they come on board. And with giving them a little bit more time to decide what their vision is of what they’re going to do and how they’re going to do it. So it’s shifting a little bit more that way. (IFP)

With the wide range of people wanting to come and farm, from a range of experiential backgrounds, new processes for application had to be built, as well as what the program main goals and vision were. The current farm manager at the Incubator Farm Program shared:

They wanted all farmers to have a lot of experience. That was one of the biggest stumbling blocks from the beginning, and why I think they had a hard time recruiting people. Whereas with me, I think what’s more important with my screening process is the marketing and business plan. Because anyone can be an incredibly knowledgeable farmer, but if you don’t know how to translate that into a farm business, we can’t help as [and incubator]. It’s just not going to work out. (IFP)

With this change in strategy for incoming learners, interest and enrollment in the Incubator Farm Program has changed drastically. From lackluster participation to operating at capacity with irrigated land learners can use. The farm manager said:

What I've been telling people is feel free to come check it out, feel free to come volunteer, feel free to like come be a part of it. But that irrigated space most likely we will have a little bit in 2017. But otherwise, I'm like, yeah, the only thing is right now is really livestock. Or I don't know, if you could figure out a way to utilize that patch of ground, maybe someone who's an orchardist would want it to come in and plant something. I'd be in to that. But unfortunately, for vegetable production we're pretty much full. (IFP)

5.3.2.1 GROWING COMMUNITY CONNECTIONS

As programs evolve to better meet learner need and goals, there is also growing and adapting to better serve the greater community as well. The University Certificate Program also hosts a series of workshops throughout the season, connecting with local farmers and working to develop their educational programming. The farm is working to expand their range of programming to become more accessible to farmers of all experience levels, including current farmers in the community. As a manager stated:

We identify need among existing farmers. I love focusing on existing farmers and investing in people where they are sure with farming and are already doing it. We are trying to develop that now which is successful and participatory. Farmers are sharing their own skills, property, equipment, and everyone seems to be invested in developing the network for continuing education for farmers. I like the idea of doing something similar for that format for beginning farmers. (UCP)

The farm owner hosting the Private Farm Internship sees the farm as a social organism that operates within other larger structures of the greater community and the natural world. The farm and its programming is evolving, just as the other social organisms are constantly evolving. How the farm fits into the community and where it places its energy within the larger system is ever-changing and worth thinking about. The owner stated:

We're working as a social organism, as a small social organism. For the greater social organism. And you now, we're sort of right on the edge of where the social organism meets the planet in a way. To have a food manufacturing thing, which we call a farm you know. But it's also integrated into the natural world, the water the sky the animals, uh and then how do you, so in some ways that's a very broad way of looking at it. (PFI)

He went on to say that this larger part the Private Farm Internship plays in the community also connects to learners on-farm.

And in that way you have to know how to navigate your way around this social organism. And I think the people that come through here have that... There's some aspect of working with that larger group and also for the group project on the farm. Feeding the people on the farm but also feeding the wider community. So we're really working more as a, it's almost a service. (PFI)

5.3.3 ALTERING PERCEPTIONS AND BUILDING SUPPORT

Whether or not learners continue with farming as their primary career path, these programs are building the sustainable agriculture movement by teaching and engaging a new wave of knowledgeable, passionate, informed consumers, who are invested in and care about the sources of their food. As an owner of the Private Farm Internship stated:

Our goal is not to create farmers. Our goal is to create a community of people that are supportive and aware and interested in building a healthy food system. And a group of people that can then share with other people in their community as the community spreads into a wider realm of people that are going to continue to share making healthy food choices or the dynamics of the food system. (PFI)

One learner noticed how going through the University Certificate Program got her to think about food and agriculture on a deeper level than she had before. She is now starting her own small farm business, and will have to be an educator in her community around issues of agriculture and food as she works to make a place for herself within the farming community. She said:

I think something I came away with that I wasn't expecting was a change in my political view of food and food systems in the United States. Everybody hears organic and you're like you know, that's for rich people. But to understand the culture behind it and food systems and

politics and how it's kind of super messy and scary, is something that I found has lingered with me since I left there. I think you're just kind of judgmental of the system as it is now and how it's not truly serving us as a people. And though you're starting this really small stamp of it in your own little way, and that as a whole is a scary thing to take on. It kind of is, you know, to elbow your way in to where people think that the food they are eating is safe, and maybe it isn't so much. Those are things I hadn't questioned before. (UCP)

Others saw a shift in their perspectives on the natural world shift while going through the program.

As they leave the program and venture forward, be it in farming or other work, those perspective shifts will likely stay with them.

My perspectives have changed too. In terms of, I don't if you'd call it the shape of the world or something, but you feel very much more in tune with like, I am a part of the soil or the world, or as this is functioning, rather than as like, I manipulate these things. Yeah, you notice the seasons, you notice the changes. You enjoy the bird that comes by every day and like sits next to the field or something. You're like, we've got this thing. (UCP)

Another noted that the shifts in perspective and observation of the small changes established a deeper connection with the earth and really solidified her feelings about continuing on in agriculture and being a part of food systems work.

Being outside all the time and like having the connection with weather and nature. And like, this year, more so than any other year, I was so much more observant of what was going on around me in terms of the natural world and things changing. And being able to see things change day to day and noticing it. And I was just like, mind blown! That I could notice from one day to next how something had grown or like the leaf color had changed. It was just those subtle little things. That deep connection is something really powerful, but keeps drawing me back. I love, I love being outside and there's just such a sense of wonder in seeing things grow. (UCP)

One learner at the incubator farm finds satisfaction in the day to day details and surprises the work brings. As he collected eggs from his hand constructed chicken coop, he stated that, "Sometimes you get a brown speckled egg and that's sweet! You don't get that in the store. It's satisfying" (IFP).

5.3.4 FINDING VALUE AND MAKING MEANING

These programs are not only creating farmers, but they are helping to build momentum around community-based regional, sustainable food and agricultural systems by increasing the numbers of knowledgeable citizens. The work in food and agriculture is about more than being outdoors, more than just a source of income; it holds greater meaning and purpose for those taking part in these programs. The passion they bring to farming and food systems work is something that will most likely continue to bolster the movement as they leave the education programs.

Many find value and satisfaction in working to provide food that is nourishing the community and a part of a larger system of change. A learner said,

And I know that [I'm] providing that food to nourish someone. ...It's really cool being part of something bigger than me. It's part of a change in a food system that needs it. And it's part of a process of providing good food, healthy food to people who need it too. It's really gratifying to be able to work with your body and produce something. And literally see the fruits of your labor, right? I just think it's a really rewarding job. As hard as it is and as frustrating as it can be, it's very rewarding. (UCP)

Another noted that,

I think it's the same thing that kind of attracts me to cooking. When you cook a really awesome dish and you watch somebody enjoy it, and like really truly enjoy it, you take pride in that. I think it's the same thing when you grow something and somebody is, like you'd be at CSA pickup and they'd be like, "Look at these tomatoes!!" and they're... appreciating what you've done. There's some deep satisfaction in knowing that you're the person that did that. (UCP)

That sense of pride in growing food for the community, and having that food be accessible and nourishing for people, was often noted. "I think it is one thing I can be really passionate and proud of doing. I mean. I really think there is so much importance in food accessibility" (PFI).

For one learner, part of his role as a farmer in the community is educational, teaching people the importance of small scale sustainable agriculture within the community. However, he

noted that it isn't always easy to convince people to look past more capitalistic notions of value and viability. He noted, "I've had some people come up and ask me, "Is your farm viable?" My response is, "How could providing the community with local produce not be viable?" You know, if I'm supporting the community all I ask is that they support me" (IFP).

Whatever learners find valuable in their work or how they decide to continue on in their career paths, farming and food systems work requires a great deal of hard work and passion. "It's gotta be something that you really want to do, you know? And hopefully there can just be more and more of us doing it. And who are successful" (UCP).

6. CONCLUSIONS

6.1 SUMMARY OF KEY FINDINGS

Many prospective new generation farmers are in need of skills and knowledge, and farmer education programs provide them a safe and collaborative space where they are able to practice and learn necessary skills. The hands-on practicing and learning of skills is important to learners, however, it is how these programs share knowledge and foster learning that creates a deeper meaning and worth for learners. These programs provide a space to learn in community and within an ethic of openness to discovery and innovation. Learners can shape their experience, learn in very authentic learning environments, and are able to make decisions on-farm.

These programs have been evolving to address the needs not only of those who want to go into agriculture after the completion of the program, but also those who use these programs as a way to grow in their knowledge and understanding of farming in order to be able to make an informed decision about whether continuing on in agriculture is a practical next step for their career and livelihood. New farmers are coming from a diverse set of backgrounds and experiences and their educational needs are changing; these programs are co-evolving alongside them to reflect these new-generation farmers and better serve the needs and goals of those who are considering entering into agriculture.

Not all learners from these programs will go on to become farmers. However, this lack of entry into agriculture does not indicate that these programs do not create meaningful experiences for learners or that they are not doing their job around educating the next generation of farmers. Whether or not learners make the transition from prospective to beginning farmers, these programs are helping to build the sustainable agriculture movement by teaching and engaging a

new wave of knowledgeable, passionate, informed consumers, who are invested in and care about their farmers, farms, and food system.

6.2 SUGGESTIONS FOR EDUCATIONAL PRACTICE AND FUTURE RESEARCH

This research touches on a small piece of the needs and experiences of prospective farmers as they learn, grow, and make decisions regarding their continued career paths, be that in agriculture or other fields. There are areas touched on by this study that could benefit from future in-depth research. These include:

- What path do these learners follow after completion of programs? How do their experiences in these programs affect their next steps and long term career plans and goals?
 - o Does the type of program learners take part in increase or decrease their likelihood for long term careers in farming?
- For those who consider taking part in farmer training programs but do not enroll, how does their path differ from those who do take part in educational programming? If they are farming, how did they go about gaining the knowledge and skills needed in order to farm?
- What is the importance of financial management training and skill building in helping with long term success for learners?

Educational practice around prospective farmer training programs could benefit from increased collaboration and communication between programs. This increase in communication could help bring practitioners together to discuss experiences, best practices, and program curriculum development. An increase in collaboration and learning between formal and experiential

learning programs could also help benefit programs as they learn from each other and continue to develop their programs to best meet the needs of prospective farmers as they begin their journeys into agriculture.

APPENDICES

APPENDIX A. IN-DEPTH INTERVIEW GUIDES, LEARNER

University Certificate Program

When did the idea of farming first come to you? Tell me about this.

How did you get started in farming/agriculture?

How did you decide to take part in this program?

How'd you first hear about the program?

Were there other programs you looked at before choosing this? Either a similar program or others?

What made this program stand out to you? Why did you choose to come farm here?

Did you visit the site? Other sites? What was that like?

Were there any specific skills you expected/wanted to get out of this program?

Did you have much experience with the kind of skills that they are teaching during the program?

Is the program meeting your expectations? (What you expected the work load to be like, the skills/knowledge you're gaining, etc.)

What's been good? More difficult?

Anything you weren't anticipating?

Are you gaining the skills and knowledge that you hoped to?

Anything you wish they would have covered that hasn't been addressed?

So, what's next after you finish here?

Is there anything you've learned this season that will stick with you moving forward?

Is there any advice you would give someone coming into the program?

Private Farm Internship

When did the idea of farming first come to you? Tell me about this.

How did you get started in farming/agriculture?

What was your experience/skill level with this kind of work coming into [this program]?

How did you decide to take part in this program?

How'd you first hear about the program?

Were there other programs you looked at before choosing this?

Either a similar programs or others?

What made this program stand out to you? Why did you choose to
come farm here?

Were there any specific skills you expected/wanted to get out of this program?

Is the program meeting your expectations? (work load to be like, the skills you're gaining, etc.)

What's been good? More difficult?

Anything you weren't anticipating?

Are you gaining the skills/knowledge you hoped to? Anything you wish they would have covered that hasn't
been addressed?

How is the communal living aspect of the program?

What are best parts/hardest parts? Given your experience, would you create a program that required
communal living? Why or why not?

What have been the best parts? The most difficult?

So, what's next after you finish here?

What about your experience at [this program] has led you to want to continue in this line of work?

Any advice you'd offer someone coming into the farm next season?

Incubator Farm Program

When did the idea of farming first come to you? Tell me about this.

How did you get started in farming/agriculture?

What was your experience/skill level coming into the incubator?

How did you decide to take part in [this program]?

How'd you hear about the program?

Were there other programs you looked at before choosing this? Either a similar programs or others?

What made [this program] stand out to you?

Were there any specific goals you wanted to achieve by farming at [this program]? Or skills you wanted to gain?

Has your experience farming at [this program] met your expectations coming into the season? (work load balance, support systems, other farmers, etc.)

Anything you weren't anticipating?

What has been the best part of the experience? The most difficult?

Are there any things you'd like to see happen at [this program] in the coming seasons?

So what's next for you? (Either for next season, or for looking further into the future) goals for next season? After [this program]?

Is there anything you've learned this season at [this program] that will stick with you moving forward?

Any advice for the new farmers coming in next season?

APPENDIX B. IN-DEPTH INTERVIEW GUIDES, FOUNDER AND MANAGER

University Certificate Program

Could you tell me a little about the beginning of this program? For example, how long has the program been running?

How did the program begin? What was behind the decision to begin to take on learners in this capacity?

How has the program changed over the years?

How do learners hear about the program?

Is there an application or interview process?

How many do you take on each year?

Are the number of applicants each year fairly steady?

Are they coming into this experience with varying levels of skill?

How is the program structured? Tell me what a typical day looks like?

What hours do learners work throughout the week?

What responsibilities do they have on farm?

How do you incorporate education into the program?

What kinds of educational programming do you have?

All in field/hands-on learning?

How do you find a balance between the educational aspects of the program with the need to be efficient in getting all work accomplished and ready for market, CSA, wholesale, etc.?

What does the program cost for learners?

Are there scholarship opportunities for learners?

Have you found the cost of the program to ever affect learners' decisions to attend the program?

What is your goal for learners when they leave this program?

What do you think is most important for them to take from this experience?

What do most go on to do after completion of the program?

Private Farm Internship

Could you tell me a little about the beginning of this program? For example, how long has the program been running?

How did the program begin? What was behind the decision to begin to take on interns/apprentices in this capacity?

How has the program changed over the years?

How do students hear about the program?

Is there an application or interview process?

How many do you take on each year?

Are the number of applicants each year fairly steady?

Are they coming into this experience with varying levels of skill?

What about this program do you think draws such a diverse range of people – backgrounds, lifestyles, experience levels, etc.

How is the program structured? Tell me what a typical day looks like?

What hours do interns work throughout the week?

What responsibilities do they have on farm?

How do you incorporate education into the program?

What kinds of educational programming do you have?

How much of the learning is in-field or hands-on/experiential learning?

How do you find balancing the educational aspects of having interns/apprentices with the need to be sure all tasks are accomplished efficiently and you are meeting your own bottom line?

How are interns/apprentices compensated?

The communal living aspect of your program seems to be fairly unique. What was behind your decision to design the program with this feature?

Do you think this has an impact on the intern/apprentice experience while working here?

What is your goal for students when they leave this program?

What do you think is most important for them to take from this experience?

What do most go on to do after completion of the program?

How does the program change for interns who choose to stay on a second season?

Do they gain more responsibilities? Get to take on additional projects?

What do the second year apprentices go on to do when they finish working at the farm?

Anything else you think I should know about the farm and/or the internship program?

Incubator Farm Program

Could you tell me a little about the beginning of this program? For example, how long has the program been running?

How did the program begin? What was behind the decision to start the program? Who was behind this decision (major players?)

How has the program changed over the years?

How do farmers hear about the program?

Is there an application or interview process?

How many do you take on each year?

Are the number of applicants each year fairly steady?

Are they coming into this experience with varying levels of skill?

How is the program structured? How long is each learner able to stay at the incubator?

What responsibilities do learners have on farm? (outside of taking care of their plots)

What role does the farm manager play? What role does the non-profit play on farm?

How is does farmer education look at the incubator? (Is there educational programming available to participants? Training? Workshops?)

What does the program cost for participants?

What resources are offered as a part of their participation in the programming?

As program manager, what is your goal for participants when they leave the program?

What do you think is most important for them to take from this experience?

What do most go on to do after completion of the program?

If they decide to continue farming, does the incubator assist with their transition off farm?

LITERATURE CITED

LITERATURE CITED

- Agriculture Census 2012 Highlights. (2014). *Farm Demographics: US Farmers by Gender, Age, Race, Ethnicity, and More*.
- Ahearn, M. C. (2011). Potential Challenges for Beginning Farmers and Ranchers. *Choice: The Magazine of Food, Farm and Resource Issues*, 26(2).
- Ahearn, M. C. (2013). Rural Beginning America Farmers and At Ranchers Glance At Glance 2009 Edition. *USDA-ERS Economic Bulletin*, 22(January).
- Ahearn, M., & Newton, D. (2009). *Beginning Farmers and Ranchers. Economic Information Bulletin*.
- Antoni, J. D., Mishra, A. K., & Chintawar, S. (2009). Predicting Financial Stress in Young and Beginning Farmers in the United States.
- Bailey, N. E. (2013). *Educating the Future of Agriculture: A focus group analysis of the programming needs and preferences of Montana young and beginning farmers and ranchers*. Montana State University.
- Byrd, A. P. (2011). *A Southwest Virginia Perspective of Beginning Farmers' Needs for Adult Agricultural Education: A Focus Group Approach*. Virginia Polytechnic Institute.
- Drollette, S. a. (2009a). Managing Marketing Risk in Agriculture. *Utah State University Extension*. Retrieved from [http://extension.usu.edu/agribusiness/files/uploads/factsheets/Risk Management/Managing Marketing Risk.pdf](http://extension.usu.edu/agribusiness/files/uploads/factsheets/Risk%20Management/Managing%20Marketing%20Risk.pdf)
- Drollette, S. a. (2009b). Managing Production Risk in Agriculture. *Utah State University Extension*.
- Griffiths, T., & Guile, D. (2001). Learning through work experience. doi:10.1080/13639080020028738
- Hamilton, N. (2012). America's New Agrarians: Policy Opportunities and Legal Innovations to Support New Farmers. *Fordham Environmental Law Review*, 22.
- Hamm, M. (2001). Farmland, Farms, Farming, and Farmers: The Four F's of Food Production. *Gastronomica*, 1(2), 27–31.
- Hansman, C. A. (2001). Context-Based Adult Learning. *New Directions for Adult and Continuing*

Education, (89), 43–52.

Hartarska, V., & Nadolnyak, D. (2012). Financing Constraints and Access to Credit in a Postcrisis ... *Journal of Agricultural and Applied Economic*, 44(4), 607–621.

Hassanein, N., & Kloppenburg, J. (1995). Where the Grass Grows Again: Knowledge Exchange in the Sustainable Agriculture Movement. *Rural Sociology*, 60(4), 721–40.

Kloppenburg Jr., J. (1991a). Social Theory and the De/Reconstruction of Agricultural Science. *Rural Sociology*. Retrieved from <http://www3.interscience.wiley.com/journal/123262835/abstract>

Kloppenburg Jr., J. (1991b). Social theory and the De/Reconstruction of Agricultural Science: Local Knowledge for an Alternative Agriculture. *Rural Sociology*, 56(4), 519–548.

Lusher Shute, L. (2011). *Building a Future With Farmers: Challenges Faced by Young American Farmers and a National Strategy to Help Them Succeed*. National Young Farmers' Coalition Report. doi:November 2011

Martinez, S., Hand, M., Pra, M. Da, Pollack, S., Ralston, K., Smith, T., ... Newman, C. (2010). *Local Food Systems: Concepts, Impacts, and Issues*.

Mishra, A., Wilson, C., & Williams, R. (2009). Factors affecting financial performance of new and beginning farmers. *Agricultural Finance Review*, 69, 160–179. doi:10.1108/00021460910978661

Niewolny, K. L., & Lillard, P. (2010a). 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.

Niewolny, K. L., & Lillard, P. T. (2010b). 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. doi:10.5304/jafscd.2010.011.010

Pinchot, A. (2014). *The Economics of Local Food Systems*.

Reid, T. (2013). *First Generation Farmers: An Assessment of their Challenges, Motivations, Learning Processes, and Values*. Michigan State University.

Scanlon, D. C., Bruening, T. H., & Cordero, A. (1996). An Industry Perspective On Changes Needed In Agricultural Education Curricula. *Journal of Agricultural Education*, 37(2), 17–23. doi:10.5032/jae.1996.02017

- Stein, D. (1998). Situated learning in adult education. ERIC Digest No. 195, (195), 2–5.
- Trede, L. D., & Whitaker, B. S. (2000). Educational Needs And Perceptions Of Iowa Beginning Farmers Toward Their Education. *Journal of Agricultural Education*, 41(1), 39–48.
doi:10.5032/jae.2000.01039