



Agricultural education: Gender identity and knowledge exchange

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A B S T R A C T

Keywords:

Educational programming
Network
Women farmers

Women farmers are underserved in agricultural education and technical assistance. Long held social constructions of farming women as 'farmwives' and in some cases 'the bookkeepers' rather than farmers or decision-makers influence the direction of most educational programming delivered through extension programs in land-grant universities in the United States. Consequently, many women farmers generally view these spaces as hostile, rather than helpful environments. This paper uses the agricultural training framework developed by Liepins and Schick (1998) to analyze our research on developing educational programming for women farmers. We conducted five focus groups with members of the Pennsylvania Women's Agricultural Network (PA-WAgN) to better understand women farmers' needs for education. Women farmers reported the kinds of knowledge and information they want, in what kinds of contexts, and through what means of communication. We adapt and extend the original theoretical framework developed by Liepins and Schick to incorporate the seriality of women's identities, their discourses of embodiment and the agency granted to them through social networks. Through a presentation of the results of these focus groups, we discuss both the relevance of gender to agricultural education and the importance of the network model in providing education to women farmers.

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1. Introduction

Despite widespread economic restructuring, a great deal of agriculture in the United States continues to adhere to the agrarian ideal of family farming. A gendered division of labor within the family unit undergirds this agrarian ideal (Whatmore, 1991; Little and Panelli, 2003) and contributes to the marginalization of women from knowledge exchange and decision-making roles regarding crop and animal production (Leckie, 1996). Thus, many women identify themselves, and others commonly associate them with, support roles on the farm (Whatmore, 1991; Sachs, 1996; Pini, 2002). Women who identify themselves as farmers, and thus claim spaces of authority and knowledge, often transgress the expected roles of women in rural communities (Trauger, 2004). The expectation of the roles of women translates into the spaces of agricultural education which are often male-dominated and premised on an 'expert' model of knowledge (Kloppenborg, 1991). Consequently, agricultural education in the United States rarely includes women as sources of knowledge or takes women's knowledge seriously (Shortall, 1996).

This paper uses the framework developed by Liepins and Schick (1998) for evaluating agricultural training programs to analyze our research on developing an agricultural training system that will meet the needs of women farmers. We utilize the theoretical concepts of Liepins and Schick (1998) as a guide for understanding the educational needs expressed by women farmers. We use their conceptual tools of seriality, discourse and agency to explain the research findings, and to address women farmers' educational needs. In the section following the theoretical framework, we discuss the methods and methodology of the research. We describe PA-WAgN in terms of its context, operations, participants and outcomes, and explain how we use participatory action research as a framework to guide our research and outreach activities. But first, we discuss the history of agricultural education in the United States and lay out our theoretical framework.

2. Agricultural extension in the United States

The history of agricultural education in the United States is closely tied to the development of agricultural science in the land-grant university system. Until the early twentieth century, farmers developed and shared knowledge about agriculture among themselves. After the Morrill (1862) and Smith-Lever Acts (1914), however, the production and distribution of agricultural information

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came under the purview of land-grant universities in each state and their associated Cooperative Extension programs. Under the influence of the agricultural research programs of the university, information extended to farmers became increasingly focused on the adoption of new technology for the production of specific commodities (Hassanein, 1999). As such, agricultural information was geared primarily for large-scale agricultural producers and became less relevant (and more inaccessible, see Evans, 1992) to many small farmers with specialized crops or low-technology production practices.

In the United States, agricultural extension orients much of its educational efforts to the needs of adult learners (Trede and Whitaker, 1998). Current agricultural extension teaching models incorporate multiple methods of information transfer, varying in their degree of farmer participation in the creation of knowledge. Academics have recognized for some time that agricultural extension needs to be reinvented (Francis et al., 1990; Gerber, 1992; Röling and Wagemakers, 1998). Kloppenburg (1991) argues that the agricultural science and education system requires an alternative science, one that includes the experiences and local knowledge of farmers (see also Flora, 1992). Experiential and participatory learning are essential to learning about farming, especially for new and beginning farmers (Röling and DeJong, 1998; Röling and Jiggins, 1998; Bell et al., 2004; Lockie, 2006).

The technology transfer model, which is based on persuasion by agricultural extension educators, faculty, or other agricultural professionals, delivers specific recommendations to farmers about the practices or technologies they should adopt. This is the least participatory and most 'top-down' model for agricultural extension education. In more participatory advisory work, extension educators or agricultural professionals respond to farmers' inquiries with technical prescriptions. The advisory approach is also common in projects managed by donor agencies and non-governmental organizations that use participatory approaches to promote pre-determined packages of technology. A third model, the human resource development model, continues to be employed in the agricultural extension activities of land-grant universities in the United States. Top-down teaching methods are used, but students are expected to make their own decisions about how to use the knowledge they acquire. The paradigm underlying this method includes practices such as experiential learning and interactive farmer-to-farmer exchanges. The best known examples are projects that use Farmer Field Schools or participatory technology development (van den Berg, 2004).

Compared to 20 years ago, agricultural extension now receives considerably less support from federal and local funding agencies. The continual decline in government financial support, combined with a growing concern for sustainability and equity, has also resulted in the need for participatory methods to replace top-down approaches. While some consider that participatory approaches will become more widely adopted, it is not possible to predict the long-term future of extension. Some scholars have abandoned the idea of extension as a distinct concept, and prefer to think in terms of 'knowledge systems' consisting of many actors who play different roles at different times. In an extension knowledge system context, both farmers and extension educators are experts and adopters, negotiating and collaborating in the construction of shared meanings rather than simply exchanging information (Francis et al., 1990; Gerber, 1992; Hanson et al., 1995; Röling and Wagemakers, 1998; Jordan et al., 2003; Leeuwis and van den Ban, 2004).

Participatory methods for extension education have been promoted, but few have addressed the gendered characteristics of various approaches to or the specific needs of women farmers for extension education in an explicit way. Feldman and Welsh (1995) point out that the social realities of farmers, and in particular the

'farm family,' are culturally constructed, and as such, knowledge about farming reflect this cultural context. Hassanein (1997) found that the gendered social location of women farmers influenced the way in which women exchanged information and produced knowledge, and the local knowledge developed by them was easily transmitted and translated to other farmers, who then adapted it for their own purposes. These new horizontal forms of information exchange serve women farmers well, but these forms are still not widely incorporated into extension education.

More interactive and technology-intensive educational approaches, declining federal support, and increasing reliance on local support for funding create cost-recovery imperatives for modern cooperative extension, which requires farmers to pay for educational experiences. Farmers, especially women and minority farmers, are often resource poor and reticent to pay for resource-intensive participatory learning. Although limited data exist on the extension needs of women farmers (Saito and Spurling, 1992), it is well documented that the educational extension needs of women farmers are not well met and women remain an underserved population by agricultural extension programs (Rivera and Corning, 1990; Lipiens and Schick, 1998; FAO, 2006). Liepins and Schick (1998) propose a way to evaluate agricultural training programs to address these deficiencies, and we adapt it for the purposes of this paper.

3. Identity, embodiment and trust in farmer education

Liepins and Schick (1998) suggest using three concepts through which to view and to evaluate gender and agricultural training systems: seriality, discourse, and agency. We suggest that other conceptual frames extend the theoretical approach of Liepins and Schick (1998) for understanding women farmers' agricultural training needs. First, the concept of intersectionality highlights the heterogeneous and multiple positions and identities of women and builds on Liepins and Schick's concept of seriality. Second, the ground-breaking work of Brandth (2006) on the gendered embodiment of agricultural work treats the body as a topic for understanding women's agricultural work. Women's bodies, work, and machinery are discursively incorporated into each other and give each other meaning, which complements and extends use of the Liepins and Schick (1998) concept of discourse. Third, the concept of trust is crucial to the building of social networks and empowering producers who may be geographically and socially isolated. We develop and extend this theoretical framework in what follows. Specifically, we integrate seriality with intersectionality, discourse with embodiment, and agency with social networks to develop frameworks for agricultural education targeted to women.

3.1. Seriality/intersectionality and identity

Liepins and Schick (1998) use seriality as a flexible and anti-essentialist conceptual frame through which to study the individuals involved in agricultural training. The theoretical concept of seriality focuses on how women may at different times prioritize different aspects of their identities including gender, race, class, and professional position. They negotiate their identities in relation to others across space and over time, and their identities rarely remain fixed. The concept of intersectionality that arises from black feminist theory also recognizes multiple identities but differs from the notion of serial identities. Intersectionality suggests that gender, race, class, ethnicity, sexuality, and nationality form mutually constitutive systems of power that shape women's lives (Collins, 2006). For women farmers, multiple identity locations shape their engagement with agriculture and how they are perceived by themselves and others.

Gender identities and other mutually constitutive systems intersect to define women's position in agriculture. For example,

class, marital status and sexuality work together to shape who is perceived as and who self-identifies as a farmer and who identifies as a farm wife. Women depending on how they come to agriculture, have differing educational needs based on their personal history and knowledge base. Seriality also refers to how women belong to multiple and shifting ‘collectives’ over time. These collectives are formed in relation to and in interaction with other groups, and the same woman may experience and belong to different kinds of identities in different places and times. A good example of this is a woman who, while married, identifies herself as a farm partner in her relationship with her husband, and with farm wives as a group, but if/when widowed or divorced, identifies herself with independent women farmers.

3.2. Discourses of gender and embodiment

The notions that farming is a male occupation and that many women are not serious farmers are central to the discourses surrounding farming in agricultural communities in developed economies (Leckie, 1996; Schmitt, 1998; Pini, 2002). These stereotypes, linked to the general subordination of women in society, apply particularly to rural women and their association with social reproduction, ‘wife-hood’ and domesticity (Little and Panelli, 2003). Transgression of these traditional identities meets with suspicion and marginalization (Trauger, 2004). These discourses of farming as a male occupation are tied to images about gendered bodies. As Brandth (2006) notes, farm work means working with the body. Working bodies in agriculture are clearly gendered with the masculine body taking center stage both materially and symbolically.

Perceptions of women’s bodies have long played a significant role in challenging or reinforcing power relationships between men and women (Weitz, 1998). As Saugeres (2002) acknowledges, women are not viewed as having bodies that enable them to farm, rather their bodies are seen as lacking in masculine attributes leading to the view that women’s work on farms is easier and of less value than men’s work. Other studies show how cultural constructions of rural masculinity revolve around hard, physical, dangerous and dirty work (Brandth and Haugen, 2000; Peter et al., 2000). The study by Bryant (2000) of young Australian women in agricultural training found that the male body is the symbol of all agricultural work whether physical labor is required or not. Silvasti (2003) points out that in Finland, male body qualities are favored in choosing successors to farms and women’s inferior position in farming is tied to the size, form, and power of their bodies.

Male bodily advantage in farming would seemingly dissipate with the availability of agricultural machinery which eliminates much of the need for physical strength and endurance. However, as Brandth (1995) and Little (2006) argue, rural masculinity now includes a technical competence over farm machinery. In fact, Brandth argues that farm machinery can be seen as an extension of the male body and the desire for large, powerful equipment is associated with bodily strength and ability. In their attempts to gain knowledge about agricultural production, women farmers negotiate both the ideas about and realities of their bodies and their relationships to agricultural machinery. Their lesser physical strength and mechanical competence vis-à-vis most men farmers often pushes women farmers to adopt new types of production strategies that require less physical strength and limited use of large equipment. Their educational needs on these issues are rarely addressed and provide unmet opportunities for agricultural educators.

3.3. Agency and social networks in agricultural education

Lipiens and Schick (1998) stress agency as a crucial part of agricultural education, but do not focus on how social networks give rise to agency for individuals. Social agency, broadly defined, refers

to the ability or capacity of individuals, institutions or organizations to act, to have influence or to transform (Cassell, 1993; Harvey, 2002; Muhlberger, 2005). In well-established theories of agency, such as structuration theory (Giddens, 1984), human agency is understood to be somewhat constrained by social, economic and/or cultural structures. Feminist interventions in the theory of agency, however, highlight the ability of actors to “operate independently of the determining constraints of social structure” (Sharp, 1999: 3; see also Haraway, 1991). Following these and other interventions (Archer, 1996; Musolf, 2003), post-structuralist social theory suggests that agency is located neither in individuals nor in social structures, but rather is “an emergent property of networks or collectives” (Goodman, 1999: 26).

Agency becomes crucial to success under conditions of high risk. Farmers have always faced risks from weather and markets, but global climate change and economic changes and the globalization of agriculture have exacerbated the vagaries of both the environment and markets. In their study of farmers’ knowledge networks, Sligo and Massey (2007) suggest that under conditions of increasing risk, farmers may feel a sense of shared adversity which may enable higher levels of trust and social networking behavior. These social networks arise from the desire for new modes of ‘horizontal’ information exchange. Horizontal networks facilitate the exchange of ‘tacit knowledge,’ or knowledge that is “personal and context-dependent, and as such, it is difficult... to communicate other than through personal interaction in a context of shared experiences...” (Morgan and Murdoch, 2000: 161). The primary actors in these horizontal learning networks are farmers, who share their experiences with particular production techniques (Hassanein and Kloppenburg, 1995; Hassanein, 1999; Andrew, 2003). Agency therefore is not determined by the position of actors in social or political environments, rather it is an outcome of their relationships with others, (including non-human others), and as such is a “relational achievement” (Whatmore, 1998: 26).

In summary, we extend and complement the theoretical framework of Liepins and Schick (1998) by integrating intersectionality with seriality, discourses with embodiment, and agency with social networks. We use these concepts to guide our analysis of data from research that investigates women farmers’ educational needs. We examine how intersectionality and seriality provide a lens through which to develop educational programs for women in agriculture that meet their needs and appeal to them from relevant subject positions. We explore how women negotiate the discourses and realities of their bodies as they attempt to gain knowledge about agriculture production. Finally, we ask to what extent they trust the experience of other farmers over the knowledge of ‘experts’ and to what extent they experience empowerment through horizontal learning networks.

4. Rationale for participatory action research

The research in this paper follows a feminist, participatory and qualitative tradition. Early work on feminist methodology focused on “the distinctive experience of women—that is, seeing women rather than just men in center stage, as both subject matter and creators of knowledge” (Nielsen, 1990: 19). In addition to seeing women as creators of knowledge, and agents in their own transformative politics, Rose (1993) argues that feminist scholarship and research should be “committed to *changing* oppressive aspects of socially constructed gender differences” (Rose, 1993: 58, original emphasis). Throughout these accounts and others (see McDowell, 1992; Women in Geography Study Group, 1997; Moss, 2002), run several themes, which Pini (2003) has identified as “a focus on gender, value given to women’s experiences and knowledge, rejection of the separation between subject and object, an emphasis

on consciousness-raising and an emphasis on political change” (Pini, 2003: 419).

Feminist methodology sees women simultaneously as subjects of study, as well as legitimate possessors and producers of knowledge. In addition, feminist methodology involves a commitment to action, giving voice to marginalized knowledge and experience, and decentering power relations. Naples (2003) suggests using small group dialogic methods for researchers who are engaged in activist research projects. Broadly defined, these methodologies fall under the heading of “participatory action research” (PAR) (Kemmis and McTaggart, 2000; Patton, 2002). PAR is a research/activist tradition that proliferated from a variety of philosophical traditions, including the social psychology work of Lewin (1946), the phenomenological work of Heidegger (1962) and the critical pedagogy of Friere (1973). More recently, feminist social scientists have adopted and adapted PAR methodologies as a way to work toward social change among traditionally marginalized groups, particularly communities of women (Gatenby and Humphries, 2000; McIntyre, 2003).

PAR focuses on the process and effects of research with a community of research participants, “not to describe social reality, but to change it” (Pratt, 2000). Research is conducted with and often for the benefit of participants, rather than on them as more conventional, positivist approaches have done. PAR techniques encompass a range of practices and outcomes but focus on three themes: engaging the lived experiences of participants, collaboration in the research process, and emancipatory outcomes (Reason, 1994). Participants are often seen as partners in the research process and contribute to the framing of research questions, interpretation of results and the use of research findings (Cornwall and Jewkes, 1995; Cahill, 2007). The research outcomes are often designed to develop research or other skills in the community of practice, so that they may continue to conduct their own research (Gibson-Graham, 1994). Other outcomes of PAR include for example, policy changes, institutional change, building social capital and improving health (Gatenby and Humphries, 2000; Mama, 2000; Gonzalez et al., 2007). Variations of PAR, such as participatory rural appraisal have also been used in rural development to work with small farmers in developing countries (Chambers, 2005). As such, PAR is well suited to investigating the needs of the community of women farmers who are the Pennsylvania Women’s Agricultural Network.

Research on women farmers in Pennsylvania in 2000 revealed that many women farmers felt isolated and did not have other women farmers in their social support networks (Trauger, 2004). PA-WAgN was founded in 2003 by 20 women farmers, educators and agricultural professionals in response to the need for an organization that addressed the educational and social network gaps of women farmers. PA-WAgN provides education and mentoring in empowering environments. It is loosely based on and works cooperatively with the Women’s Agricultural Networks in Vermont and Maine. The membership, which is approximately fifty percent farmers, now numbers over 900, and grows daily. The farmers operate different types of operations including dairies, vegetable farms, livestock operations, and mixed crop and livestock farms on a variety of scales, and use conventional, organic, and sustainable methods.

PA-WAgN is governed by a steering committee composed of farmers, educators and agricultural professionals that meets four times each year. Because Pennsylvania is a large state, the membership is divided into six regions with one to four regional representatives acting as liaisons between the membership and the PA-WAgN staff and faculty researchers to help develop educational programs. Two employees located at a university plan and implement educational and networking programs in cooperation with farmers, educators and the steering committee. The organization is funded by two integrated research and extension grants from the

United States Department of Agriculture, and outreach funds from Pennsylvania State Cooperative Extension, USDA Risk Management Education and the Pennsylvania Department of Agriculture. The research focuses on the educational and technical training needs of women farmers in Pennsylvania, as well as on the livelihood strategies and sustainable agriculture practices of women farmers throughout the northeast region of the USA. The research is overseen and carried out by a team of six faculty members across four academic disciplines.

5. Data collection

We conducted five focus groups in five different extension regions of Pennsylvania. Each focus group participant completed a participant profile describing their identities as farmers, the type of farm operation, and other characteristics of their farm. We transcribed the focus group interviews and two of the authors coded the transcripts separately using codes for values, motivations, educational content, positive and negative experiences with educational contexts, organizations, sources of information, barriers to seeking and obtaining education, networking (as observed during the focus group), and other needs. We chose focus group interviews because they allow the respondents to interact with and build off the ideas of one another, generating richer and more detailed data than a single interview with one person (Merton et al., 1956; Bloor, 2001). Focus groups have also been used as a way to empower women through networking (Pini, 2002). Thus, the research method chosen brought previously isolated women together for an evening of discussion about their farm operations and networking with each other, and in addition they reported to us their experiences with agricultural education. As an indication of how much participants enjoyed this aspect of the project, all focus groups requested that we meet again.

Twenty-eight women participated in the focus groups, which ranged in size from four to nine participants. The participants, all white women, ranged in age from 35 to 54 years. Nine women identified themselves as the sole operator of their farms, eight as one of the main operators, eight as a farming partner, two as farm helpers, and one did not respond. The average number of years in farming is 10, with a range between 1 and 33 years. The median number of years in farming was 5. Eleven of the women identified their farming operation as sustainable; seven as certified organic; seven as organic, but not certified; one as conventional; one a mix of conventional, sustainable and organic; and one did not specify. They operated a wide variety of enterprises with 15 fruit and vegetable farms; eight mixed livestock, fruits and vegetables; three livestock only; two dairy; and two ‘other’ enterprises whose products included maple syrup and sheep wool. Participants employed diverse marketing methods. All but four used some form of direct marketing, and twenty-one employed two or more types of marketing, including direct, retail, wholesale, pre-order and subscriptions.

6. Results and discussion

In what follows we illustrate how identity (both serial and intersectional), discourses of embodiment, and agency (through social networking) combine to provide a framework for the content, context and delivery format of agricultural education that women farmers prefer. We present several conversations from the interviews in two acts in which all three aspects of these preferences regarding agricultural education surfaced.

6.1. “The men do not really want to share”

Most women reported major gaps in their agricultural education, such as a lack of education on equipment maintenance, that

are a result of a gendered division of labor on farms and the cultural construction of femininity and masculinity around work. The exchange below reveals the lack of basic agricultural education, to which men with farming backgrounds would have almost universal access, while women would be almost universally lack access in a male-dominated profession. The women in this conversation are from widely varying situations. Lisa is married and works as the principal operator of her farm on which she raises sheep and goats. Gwen is in a domestic partnership with a man, and is the principal operator of a sheep and goat farm as well. Mary considers herself a farm partner and operator, and operates a separate enterprise on a very successful organic fruit and vegetable farm that she owns with her husband. Ann is also in a domestic and business partnership with a man and is the principal laborer and decision-maker on their farm, but considers herself a farm partner.

Lisa: The other thing is the equipment. Maintenance, repair, safety... This morning I got on the Bobcat and it was making this terrible noise. You know there is no man around and the men do not really want to share or they share in a way that I feel stupid. It makes no sense.

Ann: Well if you do not have the basic context that they have had since they were, you know....

Lisa: It is just a thing with men. They, number one, do not think that we really need to know this, but they are not there a lot of the time. Their feeling is you know don't worry about it. It will be fine.

Gwen: It drives me nuts if I think something is not going to work and I sit and think about it. Oh my God the switch on the seatbelt. If it does not work the pedals do not work. It just makes me insane.

Mary: I do not want to become like an equipment whiz or anything, but I would like to know if there is just some ice in the lines or something else.

Gwen: Or a loose wire.

This conversation illustrates these women's frustration about a lack of mechanical skills and the very serious need for education on topics related to equipment operation and maintenance, given that safety is at stake and these women also almost universally report not having access to affordable health insurance. It also illustrates how the exchange of information between men and women is laden with assumptions about what, when and in what contexts women need to know about certain things. All of these women have 'a man around,' at least some of the time, but need to do work with equipment alone despite their lack of experience and knowledge. Providers of extension education often assume that these women do not need the same level of knowledge as their partners because they are married or farming with a male relative. The intersection of marital status and type of business partnership with operator identity produces a subject position where women are not expected to need access to the same kind of information as men, but as an operator of the farm, they do need this information. Their identities as operators of a tractor (or not) change on a daily, and perhaps hourly basis. There is no reason to believe that because there is a 'man around,' that they will not need to know how to maintain and operate the tractor because he will either teach them or do it for them. This exchange clearly illustrates that the men in their lives do not want to teach them, or do not want to teach them and their need to learn this skill is crucial to their success as farmers. As women, they are disciplined by discourses of the body about who belongs in the tractor seat, and when they are required to take that place they are often disempowered.

As illustrated in an exchange in a different focus group, communication and education between women about basic farming and stereotypically male skills extends agency and empowerment

to women for a variety of reasons, including similarities in bodily size and strength. May is an operator of a small-scale organic fruit and vegetable operation, which is located on her mentor and former partner, Roy's, land. He is much older, more experienced in farming and almost two feet taller than she. The intern she learns from was a woman her age and her size visiting from Europe. The intern had less farming experience than May, but more experience working with horses in a leisure riding context.

May: I think trying to learn things from women and how women do things versus learning from a man or something that they do it in a manly way. I had an experience with an intern and she knew how to deal with horses and farms and all this kind of stuff and she showed me a way to do it that Roy could not show me because he is a big man and he just did it his way. So I think some of the regular kind of things that women farmers do is say okay this is how I do it and this is how I have mastered it.

Liz: What was the main difference between the way he did it and the way she did it?

May: We were about the same size so the way they grabbed all of the harnesses. Like all of the harnesses and stuff. That was a challenge for me to get all of it on my body and then over onto the horse. She just like very easily did it and it did not take that much energy. Whereas the way Roy lifted it, it was just like ripping it with one hand because he is strong. She knew how to do it where she had it on her shoulder and then kind of worked it onto the horse.

May's comments show the benefits of learning a skill from another woman by illustrating the inability of her male farm partner to teach her or help her in ways appropriate to her size and strength. Her embodied experience as a smaller woman made learning from her male mentor impossible, and his embodied experience as a larger man, made teaching her impossible. Her serial identity also influences the situation and her 'need to know.' Where she once might have had Roy, as her partner, do it for her, she now needs to do it herself, and thus her educational need changes as her identity and relation to others changes. While she might have sought out someone more experienced in farming and an 'expert' on farming with horses to learn this skill, she was best taught by an intern who had little experience with this particular skill, but comfort and knowledge around horses and their equipment.

May's body is capable of performing this work, but when disciplined by the discourse of male size and strength, she is disempowered. She is empowered, however, by her relationship to others, whether through her partnership with Roy, or in this case, through her relationship to the intern who was willing to teach her, and from whom she was willing to learn. May's experience as a learner is influenced by her embodied experience as a woman, her shifting and contingent identity in relation to others and her willingness and openness to learning from anyone willing to respectfully and productively teach her.

6.2. "Power Point should be shot as far as I am concerned"

As illustrated above, women do not necessarily feel the need to seek out recognized 'experts' in a specific topic area, and for most women in the study, context was just as important as the actual content of the educational event. The women in the focus groups almost universally shared an antipathy for learning from 'canned' Power Point presentations frequently used as a teaching method by extension educators, or speakers otherwise trained in a lecture style of teaching or using hierarchical pedagogies. The problem with these presentations, as articulated by Liz, is the lack of interactivity and the one-way direction of information flow between the 'expert' and the audience. Liz is an independent operator of

a small-scale diversified livestock farm. She is in a domestic partnership with a woman, and works full-time off the farm as an educator.

Liz: You do not get a chance to hear from the audience and learn from each other. Usually in an audience, at least in farming, there are a lot of people there with a lot of collective experience, whether they know it or not. When they start asking questions that is when you learn it, compared to the single individual standing in front and if they turn off the lights and do Power Point, which Power Point should be shot as far as I am concerned.... You know it is just that when we had Power Point that just really wrecked a lot of things. Many, many people are not really versed in how to speak using Power Point and keep your audience. So you have many, many talks especially extension kind of talks where they are canned. You know they go out and do the same talk over and over. You do not get anything out of it. It is just like yak, yak, and yak...

She continues to connect the top-down, expert-to-learner technology transfer model of education to the lack of feeling of community in a room, linked to the feeling of not being supported or taken seriously at educational events organized by extension.

Liz: It is hard enough to figure out what you are trying to do anyhow. You do not know what the hell you are doing anyway. So you are trying to learn new stuff and somebody comes there and says like bash. It is not going to work so give up now. There are guys...it is so guy, guy oriented and you know the room was full. I am kind of used to it because my job is that way too, but there are all of these guys and I am like.... Oh these are not my people.

A participant in another focus group echoed these sentiments about the hierarchical *and* gendered style of presentations delivered by 'experts.'

Gwen: They give you a bunch of handouts and the presenter is kind of a good old boy network and he talks to them and the rest of you might as well not be there. I think that is stupid and waste of time. And those Power Point presentations. They give you a copy of it so you might as well just go home and read it anyway.
Lisa: Is a Power Point where they put the words up and they read it to you?
Mary: Oh yes. I love those. (Laughter).

Formal presentations often hinder the exchange of ideas between attendees of educational events. Another conversation with this group revealed a clear desire to interact and educate each other when a basic need arose. When one focus group participant brought up a need (in this case how to extend the season for vegetables), all the women in the focus group gave her advice on how they were able to meet this need and how they could help her. The exchange continued to discuss other ways of turning waste into resources and the topic turned to May's old and out-of-use irrigation system, which she would like to rehabilitate. This conversation ultimately had less to do with needs for education, but much more with how these women learn, and how their learning was a very social process—one that depended on connection and open communication between people who shared the cultural context and the material realities of farming livelihoods.

Almost all focus group participants agreed that agricultural education was best obtained through hands-on work and learning by doing. For them, learning about farming was an embodied experience, and one that also could contribute to the welfare of another farmer, as the following exchange illustrates. Lucy, an

independent operator of a small-scale diversified organic operation, is married and has a full-time off-farm job. Bab is in a domestic and business partnership with another woman. They have an organic community supported agriculture (CSA) operation in a low-income urban area. Sara is a recently divorced independent operator who is starting a small-scale, direct marketing marketed, livestock operation.

Lucy: What about the possibility that you start out with a face to face, hands on and you follow up with just that little blurb. An e-mail or in an on-line or something. So that people do not have to go away. They do not have to travel multiple days, but they get that connection first and then they build on the connection. You know.

Bab: Something you can go back and ask questions before you take it home.

Sara: Well, like the drip irrigation system. If you started at 8:00 in the morning and installed one on somebody's place, you might have a few questions after you got home, but you would basically know when you got home how to do it.

Bab: You would be able to follow up.

Sara: Yes, you do it. You actually do it like building a chicken coop.

Lucy: Basically you need to learn how to do it and they can also help the person who is doing it. So it is really like the old Amish, let's build a barn.

While these women do not share any real cultural heritage with the Amish communities around them, they agree that the values of reciprocity, education and welfare are interconnected. They identify with their fellow farmers and each other, to the point of wanting to lend labor and time to their operations. As Liz also explains in another focus group meeting, they even find educational experiences with women very unlike themselves, and even perfect strangers, at educational events helpful and useful.

Liz: I know it sounds crazy, but like Amish people you can see their gardens and going and talking to them or your neighbors, most of the time they want to share the information...I just end up talking to people that I know that do similar things that know a lot more about it than I do.... Field days are such a great way because other people ask questions. You go like well I have never thought about that. So I really do like field days. I get a lot out of them. It is a good way to learn and network at the same time.

As Liz states, networking is an integral and given part of quality educational experiences. They lend each other agency through their association (either through teaching each other or actually contributing to the welfare of the other's operation) while they negotiate and overcome their embodied positions as women in a male-dominated world. They confront and reject a discourse that education is best delivered in a lecture style by a recognized 'expert,' and build embodied educational experiences for themselves. As Liz points out, these 'experts' are not her people, because they do not share her same embodied experience as a learner and a woman. She, like the other women in the groups, has a strong affinity for women and men ostensibly very unlike them, but who share the material reality of farming for a living. Their identities as women farmers, and who they identify as potential teachers, are flexible and contingent on their experiences and their needs.

7. Conclusion

Women's agricultural education needs are often not adequately met by current agricultural extension efforts in the United States.

This paper extends the theoretical framework of *Liepins and Schick (1998)* to explain how agricultural training organizations perpetuate uneven access to agricultural education for men and women. We extend their original framework by integrating intersectionality with seriality, discourses with embodiment, and agency with social networks. We use these concepts to understand our research findings about the educational needs of women involved in the Pennsylvania Women's Agricultural Network. Using data from focus groups, we highlighted and analyzed several conversations that illustrate the type of agricultural education that the women of these focus groups prefer.

Our findings suggest that farming women's identities vary over time and space and in relation to others, and agricultural education, to be relevant to the most women, must incorporate structures and frameworks that address their shifting and contingent identities. Here, our research extends the emerging work on the sociology of the agricultural body. Farming women's bodies are subject to discourses about who can be a farmer and whose bodies belong in the spaces of agriculture. Appropriate agricultural education will incorporate curriculum that appreciates, attends and responds to how women's bodies are disciplined by discursive constructions of embodiment. Women's lesser physical strength and technical competence vis-à-vis most men farmers often pushes women farmers to adopt types of production strategies that require less physical strength and limited use of large equipment. Their agricultural educational needs on equipment operation and maintenance, adaptive strategies and technologies, and production alternatives to using large equipment are rarely addressed and provide unmet opportunities for agricultural educators. Rather than viewing women's bodies as unable to occupy the position of farmer, educational opportunities exist to provide women with strategies, tools, and techniques to use their bodies in innovative ways and overturn the discourses which privilege the male body as farmer.

Our findings also suggest that women desire education on a variety of agriculturally-related topics. Programs targeted to women that focus on the traditionally gendered farm tasks of bookkeeping, domestic work or farm family safety overlook how women's identities are multiply constructed through work, relationships and personal history. Conversely, programs that focus exclusively on conventional production may also marginalize women because their needs for production information may be more focused on alternative production methods. It is likely impossible to identify a coherent and stable core of agricultural curriculum for women, and programs that focus on one aspect or another will not capture all members of the potential audience. Agricultural education that meets the needs of women farmers will appreciate and respond to how their identities are multiply constructed within the larger group identified as 'farming women' (intersectionality), and how their identities shift over time and across space (seriality). Intersectionality and seriality provide lenses through which to develop appropriate educational programs for women in agriculture that meets the breadth of their needs and appeals to them from appropriate and relevant subject positions.

Lastly, education is an empowering endeavor, and as such, women farmers gain agency through acquiring knowledge. Women tend to trust other women farmers, as they have often not been taken seriously by their male peers or by male-dominated forms of hierarchical information exchange. Agricultural education that meets their needs responds positively to their interest in peer-learning and their skepticism of 'expert' models, and would integrate horizontal network models of learning into curriculum. Networks of women farmers can provide on-going opportunities to build trust, share information, and build agency. The relationships built during each focus group persisted after its conclusion. In one case, four participants developed cooperative arrangements with

each other which include exchanging information about animal husbandry, sharing of farm products and the selling of other's farm products to their own customers. In other cases, farmers who were extremely isolated learned of other farmers in their region and have kept in touch, as a way to relieve the isolation, but also to enhance their businesses. In all cases the focus group participants lingered after the meeting concluded, even when we met in public spaces. Each focus group expressed a desire to meet again, and all were very disappointed to learn that we had only planned one meeting focus group in each region.

Bridging feminist theory and practice through the development of and research with the Pennsylvania Women's Agricultural network creates a new space for research, and presents new opportunities-and challenges-for feminist methodologies. PA-WAGN, as a self-sustaining network of empowered women, provides a tremendous opportunity for creating and sustaining lasting cultural and economic change in agricultural communities. The embeddedness of research within the community of practice, however, presents challenges to research objectivity and investigator neutrality, and it becomes ever more imperative to state and confront the assumptions of research and outreach objectives. Rural sociological research has long partnered with agricultural organizations and institutions, and when complemented with feminist praxis provides innumerable benefits to agricultural communities, especially those individuals who have been underrepresented and marginalized.

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