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Extension Educators' Perceptions of the Educational Needs of Women Farmers in Pennsylvania

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Abstract: The number of women farm operators has steadily increased in the United States, comprising 30% of all farm operators (2007 Census of Agriculture). The increasing diversity of farmers presents new audiences for Extension and for whom programs should be developed according to their educational needs. We report results from a survey of Extension educators in Pennsylvania. We identify how Extension educators perceive women farmers, the factors that influence these perceptions, and how these perceptions influence educational programming. We recommend ways to reach women farmers with programs that are appropriate in both content and delivery.

Introduction

The face of farming in American agriculture has changed, most notably through the steady increase of women farm operators. According to the 2007 Census of Agriculture, women were 30% of all farm operators. In 2007, there were 306,209 female principal operators (14% of all operations) as compared to 237,819 in 2002. This constitutes an increase of almost 30% in 5 years (USDA, 2007).

The increasing diversity of farm operators presents a new audience that Extension personnel and administration need to recognize and for whom programs should be developed according to their unique educational needs and opportunities. Identifying how Extension educators perceive these audiences and the factors that influence these perceptions offers insight into potential opportunities and barriers for Extension to meet the educational needs of diverse audiences. In this article we report results from a survey of Extension educators at the Pennsylvania State University (PSU), identifying specific factors that influence the development and marketing of educational programming for women farmers. We conclude with recommendations for how to more effectively serve this growing audience.

Defining and Counting Women Farmers

The US Census of Agriculture first collected data on the sex of the farm operator (primary decision-maker) in 1978. Beginning in 2002, the Census of Agriculture began collecting data on the primary operator and up to two additional operators (those involved in day-to-day decision-making) per farm. These two changes in data collected provide more knowledge about women farmers and their farms (Korb, 1997).

In Pennsylvania, the number of women principal operators increased significantly-71%-between 1997 and 2007, from 5,009 to 8,550 operators (14% of all principal operators). In total, there were 26,405 women farm operators in Pennsylvania, accounting for 29% of all farm operators in the commonwealth. Additionally, membership in the Pennsylvania Women's Agricultural Network—an organization with the purpose of creating educational opportunities for women farmers—grew from about 100 in 2004 to over 1,000 in 2009.

Women Farmers' Educational Needs

Previous research has identified unique educational needs of women farmers in terms of both content and delivery (Danes, 1996; Lee, 1992; Liepins & Schick, 1998; Trauger, Sachs, Barbercheck, Kiernan, & Brasier, 2008). These needs derive from training and experiences, gendered divisions of labor, and new farm production/business practices. The roles that women have traditionally played on farms in the United States are often viewed as secondary to agricultural production functions (Sachs, 1996; Whatmore, 1991).

In general, women have been limited to a specific set of responsibilities on the farm (such as caring for young animals or running errands) in a traditional gendered division of labor and have not taken a lead role in making major decisions about farm production and allocation of resources (Rosenfeld, 1985). As a consequence, many women have not been expected to learn key production skills, nor have they been placed

in positions of authority and decision-making (Leckie, 1996; Sachs, 1983; Sachs, 1996; Trauger, 2004). Furthermore, many women have initiated innovative agricultural production practices and have developed new farm-based business ventures, such as value-added production and direct market businesses (Hall & Mogyorody, 2007; Hassanein, 1997; Liepins, 1995; Trauger, 2001), for which Extension has only recently developed programming (Hancharick & Kiernan, 2008).

Research among women farmers in Pennsylvania reveals that they seek educational events focused on marketing, farm productivity, soil fertility, pest management, and equipment operation and maintenance. They want events in a format that respects their knowledge and desire to learn from one another (Trauger, Sachs, Barbercheck, Kiernan, & Brasier, 2008). Because of this demonstrated interest and need for educational programming among women farmers, a survey of Pennsylvania State University (PSU) Extension personnel was conducted to understand their experiences with, and knowledge of, women farmers and the extent to which Extension educators target this audience when they develop and market their programs. This article reports these survey results and discusses how Extension can enhance efforts to meet the educational needs of women farmers.

Survey Methods and Findings

An online survey (via SurveyMonkey©) was administered to all county-based educators within PSU Cooperative Extension during the winter and spring of 2007. A total of 260 personnel from all program areas were notified of the survey by college administrators and contacted four times through emails by state specialists (Dillman, 2000). A total of 115 educators responded, for a response rate of 44.2%.

The survey provided the following context and rationale:

The USDA's definition of a farm is 'agricultural places that produce and sell, or would normally sell, \$1,000 or more of agricultural products.' USDA research indicates that the number of women farmers is increasing each year. The Pennsylvania Women's Agricultural Network (PA-WAgN) has developed a survey to obtain your opinion about, and experiences with, women farmers in your Extension region. Your views are important for focusing programs and materials for women farmers.

Educators were then asked a series of questions to assess their level of knowledge about women farmers in their region and their perceptions of women farmers' responsibilities, educational needs, and challenges. Educators were also asked about their program delivery, marketing practices, and demographic information (e.g., region, program area, gender).

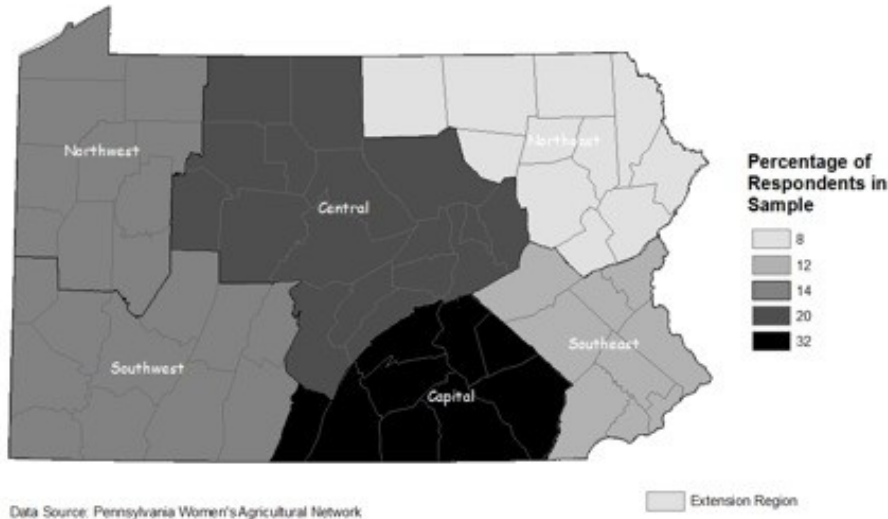
Questions on the survey were based on concepts drawn from a review of previous research on women farmers (Danes, 1996; Kiernan, 2005; Trauger, Sachs, Barbercheck, Kiernan, & Brasier, 2008; Willits & Jolly, 2002). Current research on question development was used to create the questions and measurement categories (Bradburn, Sudman, & Wansink, 2004). Most of the questions were closed-ended; one open-ended question asked educators to describe women farmers' educational needs.

To establish construct validity, six field educators (male and female), representing the target audience for the survey, reviewed an initial draft. They evaluated the survey for comprehensiveness, acceptability of language, and relevancy. Improvements resulted from this review. Data analyses were conducted using the statistical software package SPSS©.

Extension Educators in Sample

Educators who responded to the survey represented all geographic regions and program areas. In comparison to Penn State Cooperative Extension, our sample had an over-representation of educators in the capital region (32% in the sample, 21% in the system) and an under-representation of educators in the Southeast (12% in the sample, 20% in the system) (Figure 1).

Figure 1.
Regional Representation of Educators Within Sample



Educators with programming responsibilities in Horticulture and Economic and Community Development were represented appropriately; educators in Agriculture and Natural Resources and Family and Consumer Sciences were somewhat overrepresented. Educators from 4-H/Youth Development were underrepresented (Table 1). A slight majority of educators in the sample were female (55.7%), slightly less than the percentage of female educators in the Penn State Extension system (60.8%).

Table 1.
Percentages of Educators in Sample and in Penn State Extension by Major Program Area

Program Area	% of Educators in Sample	% of Educators in PSU Extension
4H and Youth Development	9.4	30.7
Horticulture	17.0	17.3
Agriculture and Natural Resources	38.7	33.5
Family Living	27.4	12.3
Economic and Community Development	7.5	6.1

Total	100.0	99.9*
* Totals do not equal 100% due to rounding.		

Extension Educators' Views About Differences in Educational Needs of Women Farmers

Two questions asked educators specifically about women farmers' educational needs. The first question asked educators to indicate the extent to which they consider the educational needs of women farmers in their Extension regions to be different from those of men farmers. Response options are listed in Table 2. More than half (58.7%) of educators indicated that the educational needs of women are somewhat or very different from men farmers. About one-quarter (26.6%) reported that women farmers' needs are the same as men farmers. Nearly 15% had never considered that there might be a difference.

Table 2.
Perceptions of PSU Extension Educators of Difference in Educational Needs of Women Farmers

Extent of Difference	% of Educators
Needs of women farmers are the same as men farmers	26.6
Needs of women farmers are somewhat different	51.4
Needs of women farmers are very different	7.3
Never really considered it	14.7
Total	100.0

The second question asked educators to identify skills for which they thought women farmers might need educational programming. The top 10 skills educators identified as "fairly" or "very" needed by women farmers in their regions were marketing, labor management, retirement planning, increasing productivity/fertility, controlling pests, maintaining and running equipment, maintaining environmental health, working with local government, and keeping workers and family safe. These topics are congruent with those identified by women farmers in previous research, such as business management, production, environmental quality, and regulatory issues (Barbercheck, Brasier, Kiernan, Sachs, Trauger, Findeis, Stone, & Moist, 2009).

In their responses to the open-ended question asking for descriptions of differences (if any) between men and women farmers, educators identified two types: learning style and learning context. For example:

The challenge in providing education for females in a mixed audience is that some people who want "just the facts" may make those who want to explore, ponder, and listen to others' experiences uncomfortable. The learning environment is the big factor that needs to be different for many women, and often the class is only "safe" to explore ideas if others are of a like mind.

Other comments described the belief that women prefer interactive learning opportunities. For example:

They need to have sessions with a lot more interaction and experiential learning—not as satisfied with sitting and looking at Power Points. They will ask questions more readily in front of a group, and would like to get a sense of what others think, from experience, not just from academic speakers.

Some educators also described how women's diverse roles on the farm, including family responsibilities, may affect their attendance and participation at meetings, and this might condition their need for other types of programming.

As a caregiver/farmer, women juggle many more things than men typically. Their needs should be directed to stress relief, time management, making their jobs easier.

Although almost 60% of the educators stated that women farmers have different educational needs, only one-third (33.1%) indicated it was moderately or very important to market programs specifically to women farmers.

Table 3.

Response of Educators on the Importance of Targeted Marketing of Educational Programs to Women Farmers

Degree of Importance of Marketing Programs to Women Farmers	% of Educators
Not Important	14.7
Slightly Important	17.4
Somewhat Important	34.9
Moderately Important	29.4
Very Important	3.7
Total	100.0

Influences on Educators' Views about Marketing Programs to Women Farmers

Because women farmers have been a traditionally underserved audience (as defined by USDA), marketing programs specifically to women farmers is an important strategy to connect with this audience. The divergence between educators' views about the needs of women farmers and the importance of marketing programs to women farmers raised questions about the ability of and interest among educators to enhance efforts to target this audience. Consequently, we conducted additional analyses to identify attitudes and characteristics associated with educators' views on marketing programs to women farmers.

A series of questions using Likert scales (strongly disagree to strongly agree) assessed educators' perceptions of women farmers' responsibilities. Educators who indicated marketing programs to women farmers is important significantly supported the view that women farmers shoulder the primary responsibility for environmental protection and for household maintenance (but not for keeping the books, making money, or supporting community involvement) (Table 4). Responsibilities for environmental protection and household

maintenance potentially reflect unique educational needs and constraints on women farmers' ability to participate in educational events.

Table 4.

Significant Correlations Between Educator's Views on the Importance of Marketing Educational Programs to Women Farmers and Perceived Responsibilities of Women Farmers

Importance of Marketing Educational Programs to Women Farmers and . . .	Correlation Coefficients (Pearson's <i>r</i>)
Using environmentally friendly farming practices is a primary responsibility of women farmers (<i>High = strongly agree</i>)	0.356***
Maintaining the household is a primary responsibility of women farmers (<i>High = strongly agree</i>)	0.341***
*** $p < 0.001$; ** $p < 0.01$; * $p < 0.05$; + $p < 0.10$	

A series of questions asked educators to assess business challenges faced by women farmers (on a four-point scale from not at all to considerable). Educators who indicated that marketing educational programs to women farmers is important also supported the view that women farmers receive unequal treatment compared to men (e.g., they are not taken as seriously as men, they lack family support for their role in managing the farm, and they are not welcome in agricultural groups), that women farmers are isolated from other farmers, and that finding quality childcare is a challenge (Table 5). These are concerns raised by women farmers themselves (Barbercheck, Brasier, Kiernan, Sachs, Trauger, Findeis, Stone, & Moist, 2009) and potentially reflect educators' empathy with and understanding of their clients.

Table 5.

Correlations Between the Importance of Marketing Educational Programs to Women Farmers and Perceived Challenges Faced by Women Farmers

Importance of Marketing Educational Programs to Women Farmers and . . .	Correlation Coefficients (Pearson's <i>r</i>)
Women farmers do not feel that they are taken as seriously as men	0.497***
Lack of family support for her role in managing the farm	0.440***
Women farmers do not feel welcome in many ag groups	0.353**
Lack of quality childcare	0.306***
Sense of isolation from other farmers	0.252*
Sense of isolation from other women	0.219*

Lack of Web/email access	0.216*
*** p < 0.001; ** p < 0.01; * p < 0.05; + p < 0.10	

Demographic characteristics of educators also affected their perceptions of the importance of marketing programs for women farmers. Educators who indicated that marketing programs to women is important are more likely to be female, serve fewer counties, or deliver programs in economic and community development (Table 6). Educators in the areas of agriculture/natural resources and horticulture had lower mean scores than those in other program areas.

Table 6.
Means for the Importance of Marketing Educational Programs to Women Farmers by Demographic Characteristics of Educators

	Mean Value (scale of 1-5; 5 = very important)
Primary Program Area	
Economic and Community Development	3.71*
Family Living	3.04
4-H	2.89
Agriculture and Natural Resources	2.78
Horticulture	2.61
Gender	
Female	3.25***
Male	2.46
*** p < 0.001; ** p < 0.01; * p < 0.05; + p < 0.10 (Significant tests based on independent samples t-tests.)	

Influences on Educators' Views about the Challenges Women Farmers Face

The finding that educators' perceptions of women farmers' challenges are associated with educators' willingness to market programs to women farmers suggested a need to further explore the factors associated with their perceptions of the challenges. The level of direct contact with women farmers significantly influenced these perceptions. Educators who reported interacting with more women farmers in an educational context were more likely to rate highly several challenges faced by women farmers (Table 7).

Table 7.
Correlations Between Reported Number of Women Farmers Who Contacted the Educator for Information and Perceived Challenges Women Farmers Face

Number of Women Farmers Who Contacted the Educator for Information and . . .	Correlation Coefficients (Pearson's <i>r</i>)
Lack of family support for her role in managing the farm	0.267 **
Lack of business management skills	0.235 *
Lack of farming background	0.225 *
Women farmers do not feel welcome in many ag groups	0.196 *
Lack of computer knowledge	0.195 *
Lack of web/email access	0.189 +
Sense of isolation from other farmers	0.182 +
Women farmers do not feel that they are taken as seriously as men	0.176 +
*** $p < 0.001$; ** $p < 0.01$; * $p < 0.05$; + $p < 0.10$	

Summary of Findings

Among Pennsylvania State University Cooperative Extension educators, there is a general perception that women farmers have different educational needs than do men farmers. The differences described mainly focus on program delivery and educational environment. The perceptions of many Extension educators about delivery and topics are consistent with research on women farmers' reported educational needs (Liepins & Schick, 1998; Trauger, Sachs, Barbercheck, Kiernan, & Brasier, 2008).

These findings help us understand how educators' perceptions of women farmers' roles and educational needs are shaped, most notably, by direct experience. Educators who report more professional contact with women farmers likely have developed a greater depth of understanding of the challenges and barriers women farmers face in trying to run successful farm businesses. These educators may also be seen as more empathetic and approachable by women farmers, increasing the likelihood of contacting these educators.

Educators' beliefs about targeting women farmers are influenced by their perceptions of the unique roles women farmers play (e.g., environmental protection and household management) and how these roles affect the needs of and constraints on women farmers. This in-depth, nuanced knowledge helps educators develop programs that they feel are relevant and appropriate for women farmers and should be marketed directly to this audience.

Other characteristics of the educators (e.g., their own gender and program areas) influence their perceptions. Of note are the differences in perceptions of women farmers' needs by program area, particularly the relatively lower level of importance assigned to marketing programs to women farmers by agriculture/natural resource and horticulture educators. As these educators provide the most direct farm production information, their perception of women farmers' needs will significantly influence the availability of programming that could meet women farmers' educational needs.

Recommendations for Extension

Based on these findings, we recommend the following for Extension educators and administrators.

- Develop opportunities to interact with women farmers in educational and other professional settings. Greater knowledge of this audience provides educators with a fuller understanding of the unique challenges and opportunities women farmers face and enhances the likelihood of creating programs that meet their needs. These interaction opportunities should take place in multiple contexts to reflect the complete set of roles (farmer, entrepreneur, caregiver, worker, family member) women farmers occupy.
- Ensure women are hired as horticultural and agricultural Extension personnel. Gender and program area were influential in the perceptions of barriers for women farmers; hiring female educators in these areas is likely to bring new approaches for programming to women farmers.
- Structure diversity training to recognize that there are differences among audience segments in their preferred learning styles, backgrounds, and educational needs. These differences are patterned by gender, race, economic status, religion, and farming background, among other characteristics. Such training should emphasize the existence of differences—and their influence on educational needs—without privileging one set of characteristics over another.
- Encourage regular needs assessments with both existing and emerging audiences. Administration should conduct regular assessments of potential audiences, using demographic data that identify population changes. Programs should be topically and pedagogically appropriate for these audiences.
- Partner with and support organizations already offering programs that are well attended by women farmers or other non-traditional audiences.

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