The Journal of Extension

Volume 44 | Number 4 Article 4

8-1-2006

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Recommended Citation

Thomson, J. S., Radhakrishna, R. B., Maretzki, A. N., & Inciong, L. O. (2006). Strengthening Community Engagement Toward Sustainable Local Food Systems. *The Journal of Extension, 44*(4), Article 4. https://tigerprints.clemson.edu/joe/vol44/iss4/4

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August 2006 // Volume 44 // Number 4 // Feature Articles // 4FEA2

Strengthening Community Engagement Toward Sustainable Local Food Systems

Abstract
Perspectives of Extension educators relative to local food system (LFS) issues are examined. These educators perceived consumer food safety, viable ag-related businesses, land use planning, farm land preservation, loss of family-owned farms, and access to quality foods as important issues. Extension educators viewed county Extension directors, regional directors, and program advisory boards as the strongest supporters for the local LFS. Lack of program resources to support and carry out LFS programming was identified as a barrier. Significant differences were also found between Extension educators' demographic and program characteristics and important LFS issues.

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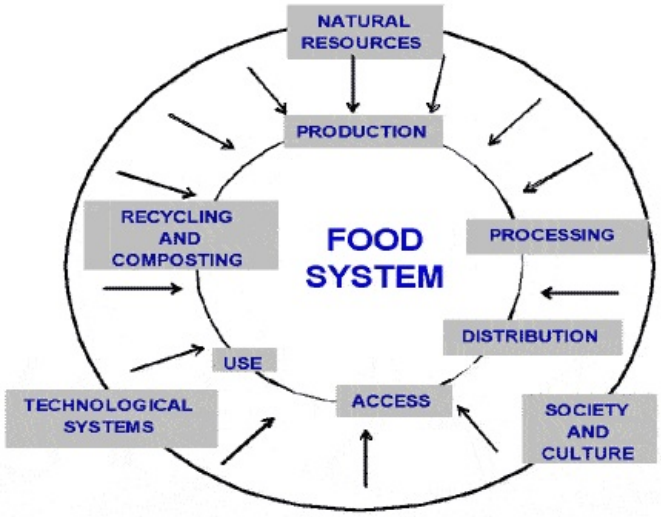
Background

In the last decade, a growing recognition of the importance of local food systems (LFS) has emerged. A number of agencies, including federal and state governments, land-grant institutions, and sustainable agriculture organizations have initiated dialogue and provided funding and other support for LFS programming.

The LFS is a system in which foods are grown or produced, processed, and distributed locally at the household, neighborhood, municipal, and even regional level (Dahlberg, 1994). Dahlberg includes social, economic, and environmental issues surrounding the production, processing, distribution, access, use, and recycling and disposal of food, (Figure 1). Others have considered locally grown food as products sold within 40 miles of their farm location (Nash, 2003). To Smith (2003) local meant same-day delivery, but considered distances up to 100 miles as valid. Isensee (2003), however, provides a more comprehensive description of what local is. He states that backyard to 1 mile is a neighborhood, 1 mile to 10 miles is a city, 11 to 25 miles is a local area, and 26 to 100 or

150 miles is a region.

Figure 1.
The Food System (Dahlberg, 1994)



Many investigators have documented the benefits of LFSs (Dahlberg, 1994; DeLind, 1994; Gordon, 2003). These benefits are categorized as social (knowledge of from where foods come, production practices, interaction among like-minded consumers), economic (supporting the local economy, fewer transportation costs, increased local employment), health (improved food safety and lower risk of bioterrorism), and environmental (maintaining biological diversity and less use of pesticides/chemicals). Besides keeping businesses in the community, a sustainable LFS can offer fresh, tasty, and safe foods to consumers.

Because a variety of safe and nutritious food is available, local production provides both long-term food security and better health for local residents (DeLind, 1994). Stofferahn and Goreham (n.d.) have identified consumer trends that provide opportunities to develop LFS. These trends include: 1) increasing food safety concerns, 2) changing perceptions about organic foods, 3) changing buying behaviors, 4) willingness to pay more for premium products, 5) becoming more health conscious, 6) gaining popularity of buying seasonal foods, 7) increasing concern about the quality of life, and 8) recognition of the importance of supporting the local economy.

Serious gaps in communications and understanding of the food system exist among the public, the media, and food and agricultural stakeholders. Fewer and fewer consumers understand how their food is grown, how it reaches their market places, or the human and environmental costs involved in the current system. Yet a growing interest in local foods and markets can help to increase and support the availability of such foods. Most consumers also feel that local foods may have quality advantages over those imported from distant suppliers (Thomson & Kelvin, 1996).

In a survey of 1,205 consumers in the Northeast, nearly 88% of the respondents believed that local fruits and vegetables were fresher, 60% thought they looked better, and 62% said they tasted better than products imported from elsewhere (Wilkins & Bokaer-Smith, 1996). In a study conducted by Thomson and Kelvin (1996), consumers perceived that their buying patterns influenced farming and the food choices available in the market. Such responses indicate consumer preference and marketing opportunities for local produce and support for the development and sustainability of more localized food systems.

Many Extension programs relate to the food and fiber system from best practices in agronomic crops and livestock to nutrition, diet, and health and resource management. To facilitate Extension's involvement in the LFS, Extension educators should be aware of their views on the food system and those of their colleagues and their communities. In addition, they also should be aware of the support and barriers they perceive exist for such programming both within Extension and within their communities. With such information, Extension educators can recognize the variability regarding their perceptions and those of their colleagues and stakeholders toward the LFS both within their own organization and within their communities. Such research supports LFS program development and implementation.

Purpose and Research Questions

To strengthen LFS programming through Extension, field-based Extension educators were asked their perceptions about LFS issues, support and barriers to LFS programming, characteristics of their communities, and organizations involved in LFS programming. Through the study, the researchers plan to develop a framework for LFS programming. To guide the research, three questions were asked:

1. What are the important LFS issues perceived by Extension educators?

2. What factors--support and barriers--affect LFS programming at the county level?

3. What differences, if any, exist between demographic characteristics of Extension educators and their perceived importance of LFS issues?

Methods and Procedures

The population for the study consisted of all (N=203) Extension educators employed by Penn State Extension. These included educators with primary responsibilities for programming in family and consumer sciences, 4-H/youth development, community development, and agriculture and natural resources. The population frame was obtained from the Extension Director's Office.

This study utilized a descriptive research design. A three-section survey instrument suitable for collecting data via the Web was developed by the investigators. Section one contained 21 statements relative to LFS issues measured on a five-point Likert scale ranging from 1 "very unimportant" to 5 "very important." Section two identified factors--support and barriers-- that affect LFS programming. The factors were measured on a five-point Likert-scale. The final section obtained demographic and program information (gender, program areas, highest education level, experience, training received, and history of participation in LFS programming) and open-ended comments.

The Web-based survey was validated for content and face validity by a panel of seven experts involved in LFS programming, including food science and nutrition faculty and agricultural and Extension educators. In addition, a field test/pilot test was conducted with 30 Extension educators employed in Ohio Cooperative Extension. A reliability analysis indicated acceptable reliability for the three sections of the instrument. Suggestions from the field test/pilot test were incorporated into the final instrument. For the final study, Cronbach's alpha ranged from a low of 0.68 (support and barrier factors) to a high of 0.89 (importance of LFS issues).

The e-survey was carried out through Penn State using Test Pilot software. A pre-notification letter explaining the purpose of the study and the tentative date for receiving the e-survey was sent to all Extension educators. After two follow-ups, a total of 82 Extension educators responded for a return rate of 40%.

Early and late respondents were compared based on procedures suggested by Miller and Smith (1983). No significant differences were found between the two groups of respondents on key variables in the study. Therefore, the information provided by 82 Extension educators was generalizable to the population of Extension educators (N=203). Data were analyzed using both descriptive and inferential statistics. The Statistical Package for Social Sciences (SPSS 13.0) was used to analyze the data.

Results

Demographic Profile

The majority (57.1%) of Extension educators were female. Two-thirds (66.1%) of the educators reported a graduate degree (MS/PHD) as their highest education level; 35% reported a bachelor's degree. Close to one-half of the educators indicated agricultural and natural resources as their primary area of program responsibility, followed by family and consumer science (31.3%), 4-H/youth development (16%), and community development (6.3%). Representation of Extension educators from each of the regions ranged from a low of 18.4% (Northwest/Southwest) to a high of 34.2% (Susquehanna/Northeast). Approximately 60% of the educators reported "extensive" to "moderate" participation in LFS programming.

Research Question 1: Importance of LFS Issues

Extension educators were asked to indicate on a five-point Likert scale the importance of 21 issues related to LFS programming. Mean scores for the 21 issues ranged from a low of *M*=3.76 to a high of *M*=4.45, see Table 1. The issue, *consumer food safety* was perceived as "very important" (*M*=4.45), while the issue *institutional use of local food* was perceived as "important" (*M*=3.76). Overall, Extension educators perceived all of the 21 issues "important" to LFS programming.

Table 1.
Extension Educators' Perspectives on Importance of Local Food System Issues

Statements	**N**	**Mean[a]**	**SD**
Consumer food safety	82	4.45	0.82
Viable local ag-related businesses	82	4.38	0.94

Land use planning (zoning, sprawl)	82	4.37	0.91
Ability to respond to natural disasters drought, flooding, etc.	81	4.37	0.72
Farmland preservation	81	4.30	0.99
Loss of family-owned farms	82	4.28	1.00
Access to healthy food at restaurants and other public places	81	4.27	0.92
Access to quality food by all economic groups	82	4.22	0.88
Consumers' awareness of locally grown food	82	4.21	0.83
Access to locally grown foods	82	4.18	0.89
Access to grocery stores	81	4.11	1.07
Loss of food preparation skills	81	4.09	1.08
Community participation in food and agriculture	82	4.09	0.83
Local waste management	82	4.06	0.87
Bioterrorism in food supply	82	4.05	0.86
Existence of local food processors	81	3.96	0.93
Ordinances restricting local farming	80	3.90	1.22
Hunger	82	3.89	1.09
Transfer of farm ownership	81	3.89	1.17
Globalization of food system	79	3.84	0.94
Institutional use of local foods	82	3.76	0.88

[a]Mean computed on a scale that ranged from 1 (Very Unimportant) to 5 (Very Important)

Research Question 2: Factors--Support and Barriers--Affecting LFS Programming

Extension educators were asked to indicate on a five-point Likert scale (1=not sure to 5=very strong support) the nature and extent of stakeholder support to conduct LFS programming (Table 2). Extension educators expressed "strong support" for LFS programming from their County Extension Directors (*M*=4.14), followed by their Regional Directors/Program Leaders (*M*=3.88), County Extension Associations (*M*=3.76), and Program Advisory Boards (*M*=3.76). However, educators expressed "limited" support for such programming from County Commissioners (*M*=3.30), State Director of Extension (*M*=3.26) and local residents (*M*=2.93).

Table 2.
Extent of Support for Local Food System Programming

Statements	**N**	**Mean[a]**	**SD**	**Rank**
County Extension Director	80	4.14	0.81	1
Cooperative Extension Regional Director/Program Leader	80	3.88	1.01	2
County Extension Association/Board	80	3.76	1.09	3
County Extension Program Advisory Committee	78	3.76	1.22	3
State Specialist or Faculty	79	3.66	1.18	5
Inclusion in State Extension Plan of Work	76	3.33	1.22	6
County Commissioners	79	3.30	1.25	7
State Director of Cooperative Extension	78	3.26	1.38	8
Local Residents	80	2.93	1.08	9
[a]Mean computed on a scale that ranged from 1(not sure) to 5 (very strong support)				

Regarding barriers to conduct LFS programming, educators identified lack of program resources to support LFS programming as a "moderate" barrier (*M*=2.77), followed by food systems programming not fitting their primary area of program responsibilities (*M*=2.74), and lack of knowledge to carry out LFS programming (*M*=2.56), (Table 3). All 10 factors were identified as either a "slight" or "moderate" barrier. No single factor was identified as a "total" barrier to LFS programming.

Table 3.
Barriers to Local Food System Programming

Barrier	**N**	**Mean[a]**	**SD**	**Rank**
Program resources to support local food system programming	77	2.77	1.23	1
Food system programming doesn't fit within my responsibilities as an extension educator	76	2.74	1.33	2

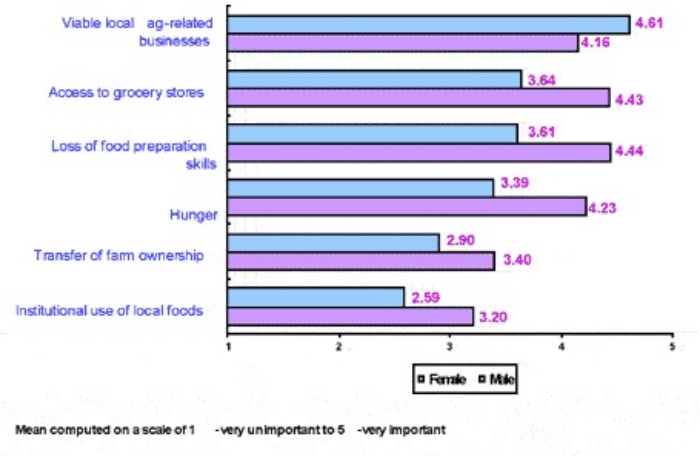
Knowledge to carry out programming on the food system	77	2.56	1.28	3
Documenting outcomes of local food system programming	77	2.40	1.08	4
Organizational incentive/rewards to do programming in local food systems	72	2.35	1.25	5
Skills to facilitate local food system dialogue	77	2.32	1.26	6
Skills to organize community coalitions	77	2.32	1.25	6
Personal interest in food system issues/ activities	78	2.23	1.17	8
Program support from other field-based Extension colleagues	73	2.21	0.91	9
Program support from Extension specialists	72	2.00	0.89	10
Inservice training on local food system issues	78	2.00	0.91	10
[a]Mean computed on a scale that ranged from 1(not at all a barrier) to 5 (a total barrier)				

Research Question 3: Demographic Differences

T-tests and ANOVA were used to determine differences, if any, between select demographic and program characteristics (gender, educational level, Extension region, and primary area of program responsibility) and Extension educators' perspectives on LFS issues.

An independent t-test analysis revealed statistically significant differences at the .001 level, between gender of Extension educators and their perspectives on six LFS issues. For five of the issues, female Extension educators had significantly higher "importance" scores than male educators. For female educators, issues such as *hunger*, *institutional use of local foods, transfer of farm ownership to county residents, access to grocery stores, and loss of food preparation skills* were significantly "more important" than to their male counterparts (Figure 2). On the other hand, male educators perceived the issue *viability of local agricultural related businesses* as "more important" than did female educators.

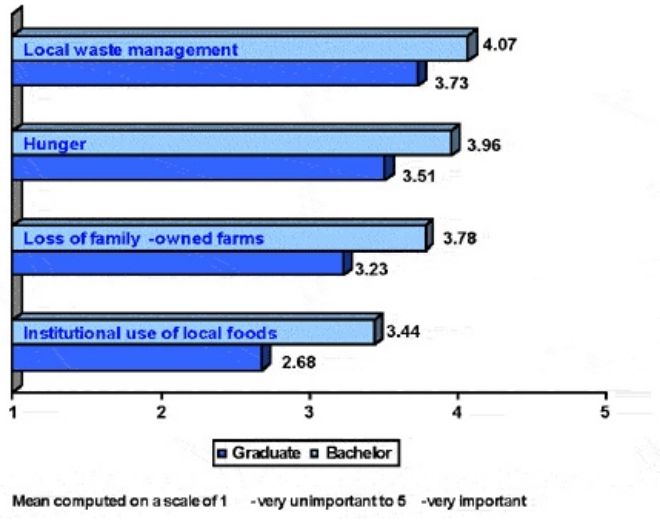
Figure 2.
T-test Results for LFS Issues by Gender



In terms of education, Extension educators with bachelor's degrees perceived 4 of the 21 LFS issues significantly (.001 level) more important than educators with graduate degrees. For

educators with bachelor's degrees, the issues *hunger, local waste management, institutional use of local foods and loss of family-owned farms* were more important than to educators with graduate degrees (Figure 3).

Figure 3.
T-test Results for LFS Issues by Degree



One-way analysis of variance was used to determine differences, if any, between select program characteristics (Extension regions and primary area of program responsibility) and perceived importance educators give to LFS issues. Figure 4 reports these results.

Figure 4.
ANOVA Results for LFS by Extension Regions

LFS issues	Extension Regions: *Region 1 NW/SW* n=21	*Region 2 CE/NE* n=19	*Region 3 CA/SE* n=36
Farmland preservation	4.45[a]	3.68[a]	4.50[a]
		F=4.94; p<.01 (Scheffe)	
Land use planning	4.14	4.00	4.64
		F=3.86; p<.05 (Scheffe)	
Globalization of food systems	4.10	3.39	3.94
		F=3.14; p<.05 (Scheffe)	

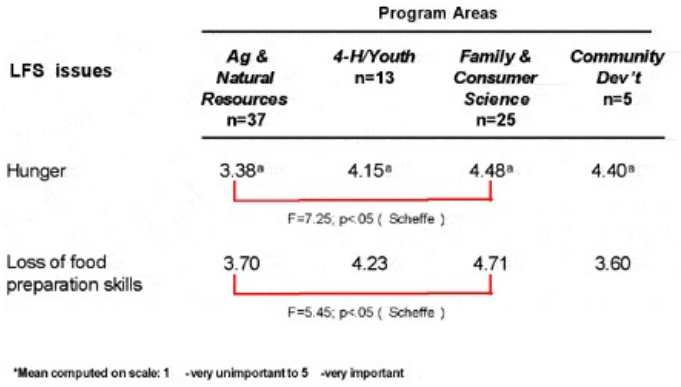
[a]Mean computed on scale: 1 -very unimportant to 5 -very important

Significant differences were found among four LFS issues and Pennsylvania Extension regions. Extension educators from the Susquehanna/Northeast region viewed *farmland preservation* as "neither important nor unimportant." Educators in the other three regions viewed this issue as significantly more important. Similarly, educators in the Susquehanna/Northeast region perceived issues such as *transfer of farm ownership and globalization of food systems* as "less important" then did educators in the other three regions.

In the Southeast/Capital regions, *land use planning* was viewed as significantly more important than in the other regions. However, no significant differences were found among the regions on the issue *loss of family-owned farms* as indicated by Scheffee post-hoc analysis. These regional differences reflect differences in the Pennsylvania landscape. The Southeast/Central region is experiencing extensive development pressure. The Susquehanna/Northeast region is heavily forested.

ANOVA results relative to Extension educators' perceptions regarding the importance of LFS issues and their primary area of program responsibility revealed significant differences for 2 of the 21 LFS issues, see Figure 5. Agricultural and natural resource educators perceived *hunger* as "neither important nor unimportant" while family and consumer science, 4-H/youth, and community development educators perceived *hunger* as "important." The issue, *loss of food preparation skills*, was perceived as "very important" by family and consumer science educators. However, agricultural and natural resource, 4-H/youth, and community development educators perceived this issue as "important." No significant differences existed regarding the *transfer of farm ownership* and program areas among Extension educators.

Figure 5.
ANOVA Results for LFS by Program Area



LFS issues	Program Areas: *Ag & Natural Resources* n=37	*4-H/Youth* n=13	*Family & Consumer Science* n=25	*Community Dev't* n=5
Hunger	3.38[a]	4.15[a]	4.48[a]	4.40[a]
	F=7.25; p<.05 (Scheffe)			
Loss of food preparation skills	3.70	4.23	4.71	3.60
	F=5.45; p<.05 (Scheffe)			

*Mean computed on scale: 1 -very unimportant to 5 -very important

Conclusions and Implications

Overall, Extension educators in Penn State Extension perceive LFS issues as "important" for Extension programming in Pennsylvania. They recognize issues such as *consumer food safety, viable ag-related businesses, land use planning, farm land preservation, loss of family-owned farms,* and *access to quality foods* as important for Extension programming. However, importance alone, particularly when each topic is considered important, cannot determine program focus. Extension educators must respond to community-identified needs to define program priorities regarding the food system.

Extension educators consider county Extension directors, regional directors, and program advisory boards as the strongest supporters for LFS programming within their communities. However, educators perceived limited support from either county commissioners or local residents. To ensure a sustainable LFS, those concerned must expand the dialogue to involve the larger community, not only those with special interests. Working in collaboration with other organizations on the LFS can broaden community participation in food systems programming.

Lack of program resources to support LFS programming was identified as a "moderate" barrier. In addition, educators identified knowledge to carry out food systems programming similarly. To help Extension educators see the scope and potential of community-based food systems programming as part of or within their professional responsibilities, opportunities need to be available at regional and state levels through which Extension educators can share with one another the local programming in which they are involved. Such settings can also be used to introduce community-based programming resources to facilitate local dialogue on the food system. Numerous resources (Maretzki & Wilkins, 2001; Nunnery, Thomson, & Maretzki, 2000; Abel & Thomson, 2000a, 2000b, 2000c; Harmon & Maretzki, 1999; Wilkins & Bokaer-Smith, 1996) are available to support such programming.

Significant differences were found between Extension educators' demographic and program characteristics (gender, educational level, program responsibility, and location) and importance of LFS issues. Four variables--gender, educational level, primary area of program responsibility, and Extension region--are strategically important to program development on LFS. Just as different issues resonate with different stakeholders, diversity also exists among Extension educators. These differences must be acknowledged as programs are defined and implemented.

Incorporating diverse interests and expertise can strengthen resulting community initiatives. An LFS reflects the community of which it is a part. All who are involved in this food system must participate in order to build consensus for, as well as acceptance of, local action. Defining the community's "food future" depends on such engagement. Extension specialists and others involved in LFS issues should consider demographic differences as well as program priorities among those involved when designing LFS programs.

Findings from the study serve as an important LFS program development tool. For example, field-based Extension educators are better able to identify and prioritize key LFS issues facing their respective counties. Second, study findings highlight internal organizational and demographic differences and external community differences.

Awareness and understanding of these differences are helpful in developing in-service training programs and developing educational resources. Several efforts are planned or ongoing to share these findings within Extension so that informed decisions can be made regarding LFS programming. Several educational resources relative to the LFS have been shared with educators and community leaders to develop and sustain LFS programs.

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