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# **Knowledge Levels Regarding the Concept of Community Food Security Among Florida Extension Agents**

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**Abstract:** This article describes a study that focused on Florida Extension agents' levels of knowledge regarding community food security. We distributed a standardized knowledge test to all Extension agents in Florida. The results revealed that Florida Extension agents have a wide range of knowledge levels regarding this concept. Agents have statistically significant differences in knowledge levels among Extension districts and time spent with their county. In order to better meet clientele needs, we recommend agent training and education on the concept of community food security and localized community assessments to identify stakeholders' community food security issues.

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## **Introduction**

Cooperative Extension in the United States has historically focused on essential components of agriculture such as food systems, community, sustainability, health, and education. As the agricultural sector is growing, changing, and improving, researchers and Extension educators are developing new ideas and ways to address stakeholders' concerns on a local level. One of these ways is through community food security, a concept that incorporates vital aspects of local food systems in a way that addresses the needs of multiple groups of stakeholders within the community. Indeed, "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" (Thomson, Radhakrishna, Maretski, & Inciong, 2006, p. 1). As such, a deeper understanding of the relevance and use of the concept of community food security would lend itself to improved Extension programming.

Extension must assess the available "tool kit" that Extension agents have available to them to effectively address stakeholder needs and deliver successful programs. In other words, Extension agents must have tools such as knowledge of the topic and resources to deliver programs before they can meet these types of needs. Proper training and preparation can enable Extension agents to participate in programming, even if it is outside of their expertise (Miller, 2004). In order to modify current Extension programming, it is essential to first look at the knowledge of Extension's front-line responders regarding the food system and food system issues.

Our research study focused on the relationship between Extension and the concept of community food security. The purpose of the study was to identify and describe Florida Extension agents' knowledge of community food security (CFS) as a concept in order to ascertain education and training needs within Florida's Extension system. Thomson, Radhakrishna, and Inciong (2004) found that Extension agents in Pennsylvania felt that lack of knowledge was one of the top three barriers to participating in local food systems-focused programs. In order to effectively tackle important CFS issues within Florida's counties, Extension must evaluate current agent knowledge and the basis of that knowledge and consequently offer appropriate educational resources. The research study described here identifies Florida Extension agents' knowledge levels in order to make recommendations on how Florida Extension can improve community food security-focused programming and better meet clientele needs.

## **Community Food Security**

There are several different definitions of community food security. However, Hamm and Bellows (2003) proposed a definition of CFS that is now one of the most widely accepted: "a situation in which all community residents obtain a safe, culturally acceptable, nutritionally adequate diet through a sustainable food system that maximizes community self-reliance and social justice" (Hamm & Bellows, 2003, p. 37). The concept of CFS is differentiated from food security in that "food security analysis evaluates the existence of resources, both community and personal . . . CFS analysis, however, can also extend beyond such basic questions as adequacy of personal resources into an examination of the food system itself" (Gottlieb & Fisher, 1996, p. 24).

There are several concepts that are addressed in the definition of CFS: food access, food safety, nutrition, sustainable agriculture (food production), local food systems (community food systems), culturally acceptable food, and social justice. We examined Extension agents' knowledge of each of these components in relation to the concept of community food security.

There are many examples of CFS-focused programs and resources throughout the Cooperative Extension System. For example, the Expanded Food and Nutrition Education Program (EFNEP) has noted impact on local food security (Greer & Poling, 2001). The USDA funds the EFNEP program, and state Extension Services manage it. The program helps low-income families deal with nutrition and food insecurity issues. In another instance, an Extension Web site offered food safety knowledge for Penn State Cooperative Extension agents. The site met specific agent resource needs in that it provided fast and easy access to knowledge and resources regarding food safety questions, as well as information for community programs on the topic (LaBorde, 2003).

Some Extension researchers have argued that Extension programming should develop more programs and resources that address local foods issues, such as Community Supported Agriculture programs, local food system capacities, and community food resources (Thomson, et al., 2004; Sharp, Imerman, & Peters, 2002). These examples illustrate the relevance of community food security issues for Extension in all areas.

## Theoretical Framework

For the study reported here, we employed a theoretical framework based on the theory of planned behavior. Specifically, the theory is an attempt to predict human behavior by looking at a person's attitude toward the behavior, his or her intention to perform the behavior, his or her perceived social norms, and his or her perceived social control. This theory is a fusion of two preexisting theories: 1) the theory of reasoned action (Ajzen & Fishbein, 1980), which addresses attitudes and social norms, and 2) the theory of self-efficacy, which posits that people are more likely to perform a behavior if they think they can do it successfully (Bandura, 1997). In this way, knowledge levels are important predictors for one's behavior, as they factor in to whether a person feels like they are able to accomplish an action. We approached the analysis with the assumption that assessing the knowledge levels of Extension agents regarding CFS would provide important insight into predicting whether or not they would engage in programs that address CFS issues.

## Instrumentation and Procedure

We developed an eight-part, quantitative questionnaire and sent it to a census of all Florida Extension agents (N = 324). We used an Internet-based questionnaire format to collect the data, using Dillman's (2000) procedure. A pre-notice postcard and multiple-wave reminder emails were utilized to increase response rate (Dillman, 2000). Sixty-two percent of the agents completed and submitted a questionnaire (n = 201).

The first part of the questionnaire was a standardized knowledge test that measured respondents' knowledge of CFS as a concept. To develop this test, we sent emails to a panel of 11 experts that included significant researchers or practitioners who were published or cited the most in CFS-related research and conceptual papers. We asked the experts to provide a list of concepts that they thought were essential to CFS. Six experts responded to the emails with their list of concepts. At least 80% of the expert responses agreed on all seven of the concepts listed above. This process ensured the content validity of the instrument as described by DeVellis (1991).

We then developed the standardized knowledge test by writing questions about the definition, the essential concepts, and applications of CFS, based on the panel of experts' seven concepts. We developed the questions using the steps suggested by Shultz and Whitney (2005) and Bloom's Taxonomy of Educational Objectives. Bloom divided this taxonomy into six categories, each increasing in complexity: knowledge, comprehension, application, analysis, synthesis, and evaluation (Seddon, 1978; Shultz & Whitney, 2005). The questions ranged from the cognitive levels of knowledge, comprehension, and application.

Finally, we sent the knowledge test questions to a panel of 32 experts in the field of sustainable agriculture (Shultz & Whitney, 2005). We decided *a priori* that those questions that all of the experts answered either correctly or incorrectly were to be discarded. There were a total of 12 responses from the panel of experts. The test was left with 10 questions after we removed the questions that demonstrated no variability in expert panel responses.

We assigned each question a point value (one, two, or three points) for a correct answer based on its level of difficulty, consistent with Bloom's Taxonomy of Educational Objectives. We assigned one point for all of the basic knowledge-level questions, two points for the comprehension-level questions, and three points for each

of the application-based questions.

The data were collected between January and June of 2006. We examined the data for nonresponse error by comparing early and late respondents with *t*- and *chi*-square tests. No differences were found between the responses. We used descriptive and predictive statistics to interpret the data.

## Results

We measured Extension agents' knowledge of CFS issues by summing their standardized knowledge question points. The possible score range was zero points if none were correct, to 19 points if all questions were answered correctly. The observed knowledge question scores were between 1 and 17 points, with a mean of 9.49 and a standard deviation of 3.38.

We looked for statistically significant differences among demographic groups. The questionnaire gathered data on respondents' gender, rank within Extension, program focus, district, and the amount of time they had spent with their counties. We found significant differences within two of these subsets: district and time spent working in their current county. There are five Extension districts in Florida. The means, standard deviations, and ranges of their scores are listed in Table 1.

**Table 1.**  
Florida Extension Agents' Knowledge Scores Descriptive Statistics by District, Florida, 2006

Group	n	Mean*	S.D.	Range	
				Min	Max
<b>District</b>					
Northwest	39	9.82	3.16	4.00	15.00
Northeast	39	11.36	3.06	4.00	17.00
Central	45	8.24	2.96	1.00	14.00
South Central	44	8.68	3.42	2.00	15.00
South	28	9.78	3.69	4.00	16.00
>1 District	6	9.00	3.10	3.00	12.00
Florida Overall	201	9.49	3.38	1.00	17.00
*Scores on a scale of zero points for all incorrect to 19 points for all perfect responses.					

We compared the knowledge score means of respondents by district using one-way analysis of variance (ANOVA). In order to check for the assumptions for this test, we used histograms for the knowledge scores to check for normal distribution. We also performed Levene's homogeneity of variance to meet the assumption of equality of variance for ANOVA. We assumed that the groups being compared were independent because there was a separate group created for those agents who served counties that fell into more than one Extension district. The ANOVA comparing knowledge scores (Table 2) showed that there was

evidence of a statistically significant difference among districts ( $P=.001$ ;  $\alpha=.05$ ).

**Table 2.**

One-way Analysis of Variance of Florida Extension Agent Knowledge Scores by District, Florida, 2006

Source	df	SS	MS	F	P
Between	5	242.930	48.59	4.64	.001
Within	195	2041.289	10.46		
Totals	200	2284.216			

Extension agents' time spent working in their current county was measured as less than 1 year, between 2 and 5 years, between 6 and 11 years, between 11 and 15 years, or more than 15 years with their current county. The means, standard deviations, and range of scores are listed for each of these groups in Table 3.

**Table 3.**

Descriptive Statistics of Agents' Standardized Knowledge Test Scores by Time Spent with Their Current County, Florida, 2006

Group	n	Mean*	S.D.	Range	
				Min	Max
<b>Time in Current County</b>					
< 1 year	23	10.00	2.69	5.00	15.00
2-5 years	74	10.62	3.42	4.00	17.00
6-10 years	42	8.50	3.14	1.00	15.00
11-15 years	13	7.54	2.60	4.00	13.00
15 years	49	8.90	3.46	2.00	16.00
Florida Overall	201	9.49	3.38	1.00	17.00
*Scores on a scale of zero points for all incorrect to 19 points for all perfect responses.					

Again, we used a one-way analysis of variance to check for a statistically significant difference in means between the five groups of respondents. After checking for the assumptions, we found that the ANOVA comparing mean knowledge scores between the groups reporting their time spent in their current county (Table 4) showed evidence of significance at the .05 level ( $F=4.92$ ;  $P=.001$ ).

**Table 4.**

One-Way Analysis of Variance of Florida Extension Agents' Knowledge Scores by Time Spent in Current County, Florida, 2006

Source	df	SS	MS	F	P
Between	4	208.593	52.15	4.92	.001
Within	196	2075.626	10.59		
Totals	200	2284.219			

Finally, we examined Extension agent knowledge based on their program focus areas. The results showed that there was not a remarkable difference in mean scores between each program area. However, the areas with the lowest range scores were Family and Consumer Sciences, 4-H, and Sea Grant (Table 5).

**Table 5.**

Descriptive Statistics of Florida Extension Agents' Knowledge Levels by Program Focus, Florida, 2006

Program Focus	n	Mean	S.D.	Range	
				Min	Max
Agriculture	57	9.70	3.18	4.00	17.00
Natural Resources	5	10.00	4.06	4.00	15.00
Urban Horticulture	31	9.93	2.73	4.00	15.00
Family & Consumer Sciences	44	9.43	3.26	1.00	14.00
4-H	40	9.26	3.80	3.00	16.00
Sea Grant	9	9.11	5.13	3.00	16.00
Other	15	8.66	3.50	4.00	15.00

### Implications for Extension

The results of the study reported here revealed that Florida Extension agents have a wide range of knowledge levels regarding CFS. No respondents answered all of the knowledge test questions incorrectly, nor did any respondents answer all questions correctly. Indeed, the results regarding the differences in knowledge levels by program focus were surprising. We had anticipated that Extension agents who worked within program areas that specifically offered CFS-based programs would have higher knowledge levels regarding this concept than would agents in program areas such as Sea Grant. However, the results of the study revealed that this is not the case.

The results detailed above have several implications for training and educating Extension agents in CFS issues, as well as other issues that are relevant to local stakeholders. Specifically, the research demonstrates that knowledge levels are variable. While this may seem an obvious finding at face value, we can derive from this that the salience of community issues may play a pivotal role in how knowledgeable agents are regarding these issues. While we expected certain agent types to be more knowledgeable, we found that knowledge levels were fairly equivalent across program areas.

However, we did see fluctuations in knowledge levels varied between districts and between time spent in the agents' current county. It is possible that much training, awareness, and education arises from

community-specific needs, rather than general Extension training. If one district has more salient CFS issues, the agents within that district may be more knowledgeable about the concept because it was a focus of their training and programming. If one agent worked in a county during a time when CFS issues were more prevalent than during the tenure of another agent, they may have a higher level of knowledge regarding CFS.

Future research needs include examining the role of issue salience in Extension agent knowledge and awareness levels. Community food security is just that—food security based in community. Communities are not only inherently difficult to define, they also change over time and differ over geographic space. Results of the study reported here indicate that agent knowledge levels of community food security differ over time and between geographic locations. Because CFS needs are constantly changing with changing communities, it is up to Extension to monitor those needs and provide programming and resources accordingly.

One way for Florida Extension to enable its agents to effectively respond to their counties' needs is through asset-based assessments. Asset-based assessments are one way to drive community development efforts by "identifying and mobilizing existing (and often unrecognized) assets" (Mathie & Cunningham, p. 474) within the community. Extension needs to stay in touch with both the needs and the available assets and resources within its counties in order to effectively address CFS issues of salience as they occur. Extension offices can do this by conducting traditional needs assessments.

Extension is constantly evolving, adapting, and improving its educational programs to meet the needs of its communities and clientele. Needs assessments can often help Extension focus its resources on communities' most important issues. "Extension's mission today focuses strongly on empowering people to solve their own problems" (SeEVERS, Graham, Gamon, & Conklin, 1997, p. 238), which may be achieved by encouraging community member participation in advisory boards that focus on CFS issues. Finally, Extension can seek collaborations or inter-organizational relationships to help best meet the needs of the community and work toward this mission. Extension offices can build relationships with existing community organizations that already address CFS issues within the county.

Florida Extension can also work to address current CFS issues through agent education and training. Extension agents are the front-line responders to community needs such as food security. Thus, Extension must provide them with the knowledge and training that will allow them to not only address CFS issues effectively, but also attain the knowledge of CFS issues that will allow them to identify them in the first place. Extension can do this by: 1) providing agents with easily accessible information regarding CFS, 2) networking agents with specialists that deal with CFS issues, and 3) promoting collaborations between county Extension offices and community-based organizations that address local CFS issues.

## Conclusion

Community food security deals with such salient issues as food access, nutrition, sustainable agriculture, and local food systems—all issues that the Cooperative Extension Service has identified as important areas of Extension programming (CSREES, 2005). We find community food security recurring in research literature as well as in the contexts of community development and community-based programs. With this in mind, ascertaining the knowledge levels of Extension agents regarding this increasingly significant concept is an essential step in determining Extension agents' programming and training needs. We must make sure that agents are educated in this area in order to encourage and enable them to participate in programming that addresses these important indicators of community health.

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