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The Changing Interest in Organic Agriculture in Texas and Its Implications for Texas AgriLife Extension Service

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Abstract: *The study reported here sought to determine the level of demand Texas AgriLife Extension agents are receiving for information on organic agriculture and their interest in training on organic agriculture. A majority of agents perceived the interest in organic agriculture was low to moderate in their respective counties, but was increasing. Agents indicated they had not received much formal training in organic agriculture but expressed an interest in training and noted traditional information resources and Extension workshops would be the most useful.*

Introduction

Demand for organic products has drastically increased and is the fastest growing agricultural sector. The market for organic products has increased by 15 to 21% annually for the past 10 years, with retail sales increasing from \$3.6 billion in 1997 to \$21.1 billion in 2008 (Dimitri & Oberholtzer, 2009).

While the amount of organic agricultural land more than doubled from 1997 to 2005, from 1.3 million acres in 1997 to just over 4 million, it has not been enough to keep up with demand (Dimitri & Oberholtzer, 2009). The U.S. currently exports \$125 million to \$250 million of organic agricultural products, but imports \$1.5 billion (Constance & Choi, 2010). As Dimitri and Oberholtzer (2009) noted, "despite the growing demand for organic food products, many U.S. farmers are reluctant to switch to organic production methods" (p. 11).

Constance and Choi (2010) found that more than 40% of Texas farmers currently operating conventional farms had at least some interest in organic agriculture. They concluded that more institutional support from land-grant universities and Extension is needed to increase adoption of organic agriculture in Texas. An Organic Working Group was created by the Texas AgriLife Extension Service to address the growing needs and demands for information on organic agriculture. The working group established four goals, with the highest priority goal being to assess Texas Extension agents' needs for information on organic agriculture, and the resources they need to meet the demand (J. G. Masabni, personal communication, September 10, 2010).

Methods

The target population for the study reported here was Texas Extension agents primarily involved with agriculture and natural resource programming ($N = 285$). The research used a one-shot case study survey methodology (Campbell & Stanley, 1963). This methodology allows for an

exploration and generalization of Texas Extension agents' needs for information on organic agriculture.

The researcher developed a questionnaire after a review of the literature (Agunga, 1995; Boone, Hersman, Boone, & Gartin, 2007; Sanderson, 2004; Sisk, 1995). The questionnaire contained sections on level of interest in organic agriculture, level of prior training and interest in future training on organic agriculture, and resources most useful in providing information on organic agriculture. Content and face validity of the questionnaire were examined by a panel of experts from five different institutions.

The section on interest in future training asked the respondent to rate their interest in participating in training on 10 topics using a five-point Likert-type scale: 1 = Strongly Disagree, 2 = Disagree, 3 = Neither Disagree nor Agree, 4 = Agree, and 5 = Strongly Agree. The scale was interpreted using the following criteria: 1.00 – 1.50 = Strongly disagree, 1.51 – 2.50 = Disagree, 2.51 – 3.50 = Neither disagree or agree, 3.51 – 4.50 = Agree, and 4.51 – 5.00 = Strongly agree. Reliability for the section on interest in future training was estimated using Cronbach's alpha ($\alpha = 0.931$) and found to be acceptable (Gall, Gall, & Borg, 2007).

In the section on usefulness of resources, respondents were asked to rank the usefulness of seven information delivery methods using the following scale: 1 = Not at all useful, 2 = Not very useful, 3 = Somewhat useful, and 4 = Very useful. A comment box was included to allow respondents to provide further suggestions.

Using Cochran's (1977) formula for calculating sample size, it was determined that a sample of 151 respondents was needed. The sample was randomly selected from the Texas AgriLife Extension Personnel Directory. Respondents were emailed two requests to participate in the study, with a link to the online questionnaire. Out of the 151 respondents, 123 participated in the online survey (81.5%). Four responses were excluded due to missing data, leaving 119 responses, or 78% of the sample, for analysis.

Non-response error was examined by calculating independent t-tests comparing early and late respondents on the primary variables of interest (Lindner, Murphy, & Briers, 2001). No statistically significant differences were found.

Results

Interest in Organic Agriculture

The majority of respondents perceived the current level of interest in information on organic agriculture in their counties to be moderate ($n = 42, 35.3\%$) or low ($n = 39, 32.8\%$) as described in Table 1. Only 2.5% ($n = 3$) perceived demand to be extremely high while 12.5% ($n = 15$) perceived demand to be extremely low.

While the current level of interest was perceived to be low to moderate, a majority of respondents noted interest in organic agriculture had increased in their county over the past 5 years ($n = 60$). Only 5% of respondents indicated a decrease in interest ($n = 6$), and 3% indicated there had been no interest in organic agriculture in their county ($n = 4$).

Table 1.
Texas Extension Agents' Perceived Current Level of Interest in Organic Agriculture in Their Respective Counties

Level of Interest	<i>f</i>	%
Extremely high	3	2.5
High	12	10.1
Moderate	42	35.3
Low	39	32.8
Extremely low	15	12.6

No demand	8	6.7
Total	119	100.0

When asked how frequently they provide information on organic agriculture, 42% of respondents reported to provide information on organic agriculture less than once a month ($n = 50$), and 33.6% reported providing information on organic agriculture one to two times a month ($n = 40$). Almost 11% reported they never provided information on organic agriculture ($n = 13$), while only one respondent reported providing information on organic agriculture on a daily basis.

Respondents who reported they provide information on organic agriculture were asked who their primary audience or audiences for this information were. Table 2 lists the audiences in order of frequency, with gardeners being the most frequently cited audience ($n = 74$). More than 50% of respondents reported homeowners to be another primary audience ($n = 65$), while full-time farmers and ranchers ($n = 15$) and Extension agents ($n = 3$) were the least cited audience in the study. This finding is reflected in one of the comments provided by a respondent: "I do my best to help gardeners and homeowners with an interest in utilizing organic methods, but the fulltime producers have not shown an interest."

Table 2.
Texas Extension Agents' Primary Audiences for Information on Organic Agriculture

Audience	<i>f</i>	%
Gardeners	74	62.2
Homeowners	65	54.6
Part-time farmers/ranchers	35	29.4
Not applicable	18	15.1
Consumers	15	12.6
Full-time farmers/ranchers	15	12.6
Other extension agents	3	2.5

Agents' Prior Training in Organic Agriculture

Respondents were asked about their level of prior training related to organic agriculture and their interest and preferences for future resources and training. Table 3 shows that almost 22% of respondents reported they did not have any training or experience related to organic agriculture ($n = 26$). The most cited source of training was self-directed learning ($n = 69$), followed by on-the-job/in-service training ($n = 41$) and personal experience ($n = 35$). The least cited sources of training were university courses ($n = 8$) and industry workshops ($n = 4$). This indicates that most of the previous training Extension agents had participated in related to organic agriculture was informal, and over one fifth of respondents indicated they had not had any experience or training related to organic agriculture.

Table 3.
Texas Extension Agents' Experience and Training Related to Organic Agriculture

Source	<i>f</i>	%
Self-directed learning	69	58.0
On-the-job/in-service training	41	34.5
Personal experience	35	29.4

None	26	21.8
Working with producers using organic agricultural practices	17	14.3
Professional conference	16	13.4
University/college workshop	9	7.4
University/college course	8	6.7
Industry workshop	4	3.4
Other	3	2.5

Agents' Interest in Future Training on Organic Agriculture

Respondents were asked to indicate their level of interest in participating in training on organic agriculture, and the results are listed in Table 4. Respondents were most interested in training on organic soil fertility management ($M = 3.86$, $SD = .91$), organic insect management ($M = 3.83$, $SD = .92$), organic disease management ($M = 3.80$, $SD = .93$), and organic weed management ($M = 3.80$, $SD = .94$). The topics of lowest interest were marketing organic products ($M = 3.34$, $SD = 1.12$), organic certification ($M = 3.31$, $SD = 1.06$), and transitioning to organic agriculture ($M = 3.18$, $SD = 1.07$).

Table 4.
Interest in Participating in Training on Topics in Organic Agriculture

Topic	<i>N</i>	<i>M</i>	<i>SD</i>
Organic soil fertility management	119	3.86	.91
Organic insect management	119	3.83	.92
Organic disease management	119	3.80	.93
Organic weed management	119	3.79	.94
Organic agriculture in general	119	3.59	.87
Organic agricultural production systems	119	3.46	.95
Marketing organic products	119	3.34	1.12
Organic certification	119	3.31	1.06
Transitioning to organic agriculture	119	3.18	1.07

Note. Scale: 1 = Strongly disagree, 2 = Disagree, 3 = Neither disagree nor agree, 4 = Agree, 5 = Strongly agree.

Usefulness of Resources

Respondents were asked to rank the usefulness of prospective resources for information on organic agriculture. A website with organic information and printable publications was ranked very useful by over 60% of respondents ($n = 77$), while extended training for college credit was ranked least useful ($n = 46$) (Table 5). One comment submitted by a respondent in this section was "not enough interest for Extension to allocate time in this area."

Table 5.
Ranking of Usefulness of Information Sources

Sources of Information	Not at all useful	Not very useful	Somewhat useful	Very Useful

	<i>f</i>	%	<i>f</i>	%	<i>f</i>	%	<i>f</i>	%
Website with organic information	1	0.8	6	5.0	35	29.4	77	64.7
Printable organic publications available online	1	0.8	3	2.5	39	32.8	76	63.9
Extension workshop	2	1.7	15	12.6	67	56.3	35	29.4
Field days at organic farms	15	12.6	24	20.2	50	42.0	30	25.2
Protocol for organic demonstration/trial plots	8	6.7	25	21.0	57	47.9	29	24.4
Online training modules for agents	4	3.4	26	21.8	63	52.9	26	21.8
Extended training for college credit	46	38.7	37	31.1	27	22.7	9	7.6
<i>Note.</i> Scale: 1 = Not at all useful, 2 = Not very useful, 3 = Somewhat useful, 4 = Very useful.								

Discussion

According to the 2007 agricultural census, fewer than 700 (0.3%) of the 247,000 farms and ranches in Texas reported to be organic (USDA, 2008). While the percentage of organic farms in Texas is below the national average, there is a growing interest in organic agriculture. The research reported here found that Texas Extension agents are receiving a growing demand for information on organic agriculture and are interested in training on organic agriculture. It is recommended that the Texas AgriLife Extension's Organic Working Group develop Web-based and print materials on organic weed, disease, insect, and soil fertility management for Texas Extension agents.

The research found that over one-fifth of Extension agents reported having no training in organic agriculture, and the most common forms of training reported were all informal sources. Extension agents expressed an interest in training on many of the topics on organic agriculture, especially organic insect, weed, disease, and soil fertility management; however, they reported to find some forms of training more useful than others. They did not find Web-based and extended training to be very useful, but reported print and online publications to be very useful and Extension workshops to be somewhat useful.

The Organic Working Group will also need to develop and provide information on organic agriculture relevant to the southern United States. The lack of research on organic agriculture in the southern U.S. restricts Texas Extension agents' abilities to meet the needs of their clientele. Creamer, Baldwin, and Louws (2000) stated this lack of research and information on organic agriculture has led many to perceive the land-grant university system to be "unresponsive" to the needs of organic farmers. If there is no research being conducted on organic agriculture at the land-grant universities, Extension agents' hands are tied, restricting what information they can provide.

This lack of research and Extension in organic agriculture has led many organic farmers and ranchers in Texas to use alternative sources of information on organic agriculture. In the Organic Farming Research Foundation's (OFRF) third survey of U.S. organic farmers, the most utilized sources of information on organic agriculture were other farmers, field consultants, suppliers, and growers' associations (Walz, 1999). The least cited sources were Extension, state departments of agriculture, and USDA offices. OFRF's findings were supported by comments from respondents from the research reported here. As one respondent noted,

We should have been doing more on organic farming before now," while another stated, "Many organic farmers have either learned to be successful [*sic*] on there [*sic*] own or have gone out of business. We missed the early boat on being a leader

in organic agriculture.

To increase involvement in organic agriculture, the study findings suggest that the Organic Working Group and Extension agents should collaborate with organic farmers and organic farming networks to establish those relationships.

While organic farmers may not be using Texas Extension agents, gardeners and homeowners are. Gardeners are a significant audience for Texas Extension agents, accounting for a lot of Texas AgriLife Extension programming. In 2009, The Texas Master Gardener (TMG) program had 6,393 volunteers who contributed more than 520,000 hours, answering 32,557 phone calls, maintaining 212 demonstration gardens and assisting with 273 youth gardens (Texas Master Gardener, 2009). The Texas Master Gardener program would provide a potential audience already extremely engaged with Extension agents and Texas AgriLife Extension.

Lohr and Park (2003) found institutional support for organic agriculture varied by geographical region, with organic farmers in the southern and north central U.S. more likely to perceive Extension as a barrier to organic agriculture. The Texas AgriLife Extension Organic Working Group should share the resources developed through eXtension's eOrganic community of practice in order to expand on the current resources available and provide resources for other Extension agents in the southern United States.

Conclusion

While Texas AgriLife Extension has not received much demand for information on organic agriculture, demand is increasing, and resources will need to be developed to meet this growing need. Extension in many regions of the U.S. has already developed numerous resources on organic agriculture, but more resources relevant for organic farmers and gardeners in the southern U.S. should be created. These resources should take many forms as Extension agents are embracing and utilizing many new technologies, but old technologies will still have their place.

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