

**PATHWAYS TO SUSTAINABLE AGRICULTURE:
Early stage diffusion of sustainable agriculture
among conventional Georgia fruit and vegetable producers**

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Introduction

Much of the early development and diffusion of sustainable agriculture information has occurred outside of traditional avenues for agricultural information exchange. Studies have shown that farmers engaged in sustainable agriculture obtain most of their information on sustainable practices predominately from other farmers, followed by private non-profits, other educational organizations, publications, farm tours and conferences, with Cooperative extension and land grant research institutions playing a smaller role. (Enshayan et. al., 1992; Gammon et al., 1994; Agunga, 1995; Egri, 1999; Walz, 1999; Delate & Dewitt, 2004; Agunga & Igodan, 2007; Parra-Lopez et al., 2007). While the establishment of alternative communication networks has been an effective means of spreading sustainable agriculture information, individuals engaged in these networks often have quite different personal characteristics and social networks than farmers engaged in mainstream agriculture suggesting a “culture gap” between sustainable agriculture practitioners and conventional farmers (Agunga, 1995).

Studies across the country confirm a growing interest in sustainable agriculture by mainstream farmers and extension (U. of Arkansas 2004, Betts et al. 2004). However adoption rates for sustainable agriculture practices remain slow, especially in the southeastern United States. In an examination of the nation’s organic acreage as one indicator of sustainable agriculture adoption, seven of the ten states with the lowest acreages in organic production are located in the southeast (states include Mississippi, South Carolina, Louisiana, Alabama, Tennessee, Georgia, and Kentucky) (USDA-ERS, 2007). In order to improve the adoption of sustainable agriculture in these regions land grant universities need information about farmers’ interests and needs regarding sustainable agriculture practices to focus limited resources towards effective strategies.

This study examines conventional fruit and vegetable farmers’ level of interest in a range of sustainable agriculture topics and how demographic indicators, market incentives, and the development of further information can influence farmers’ future interest in sustainable production practices. This study examined:

- 1) farmers’ interests in specific sustainable agriculture practices,
- 2) farmers’ existing attitudes towards sustainable agriculture,
- 3) significant barriers to adoption, and
- 3) characteristics of potential adopter groups.

Materials and methods

Two regions of South Georgia were chosen for the study. Twelve counties, each ranking in the top 20 for vegetable farmgate income in Georgia were included. The southeastern region (near Statesboro) is best known for the production of Vidalia onions, while the southwestern region (near Tifton) is characterized by larger farm sizes. The study consisted of six focus groups involving farmers and local extension agents from each region followed by a self completion questionnaire that was mailed to 344 fruit and vegetable growers in the two regions.

Focus group discussions focused on five general areas: 1) awareness / knowledge of sustainable agriculture, 2) attitudes towards sustainable agriculture, 3) information sources, 4) barriers and motivations for adoption, and 5) a needs assessment. The survey was organized according to six critical areas: 1) demographics, 2) information sources, 3) practices/ training / research interests, 4) extension assessment, 5) attitudes / perceptions, and 6) a needs assessment.

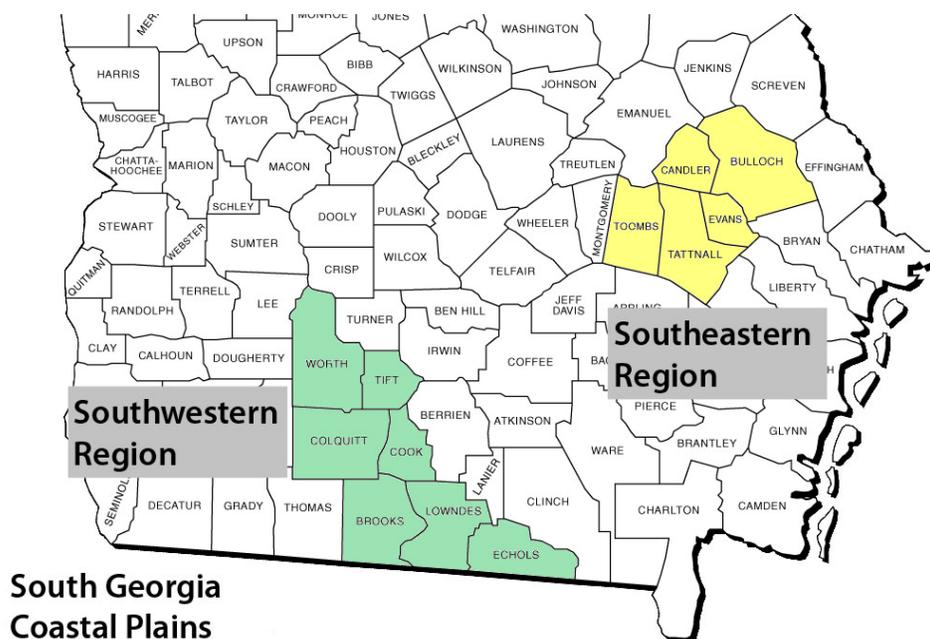


Figure 1. Georgia State Map highlighting 12 counties chosen for participation in this study.

Results / Discussion

Focus Group Results

A total of thirty-seven individuals participated in the six focus groups (25 farmers and 12 extension agents and agricultural professionals). Key themes that emerged from the focus groups were the following.

Lack of a clear definition

Most participants expressed some uncertainty in the meaning of sustainable agriculture. Very few farmers defined sustainable agriculture as a set of practices or principles. It was most frequently defined as “*staying in business*” or “*just barely surviving*,” which indicate a primarily economic perception of sustainable agriculture. Extension agents felt that a lack of a clear definition hinders their ability to effectively promote sustainable agriculture. One agent commented, “*if you’re gonna sell it to the public you need one voice, one definition.*” These comments indicate that sustainable agriculture does not have a clearly interpreted definition to most farmers and that confusion and misinterpretation of the term is still a significant barrier to more widespread acknowledgement and consideration.

Limited information available

Extension agents felt that research based sustainable agriculture information from the University of Georgia is very limited, which in turn limits their ability to share information with farmers. One agent commented, “*we’re not going to make a recommendation until we know it works.*” Agents acknowledged that there is a growing demand for sustainable agriculture information and commented “*you give [the information] to us and we’ll give it out.*”

Attitudes / interests in sustainable agriculture practices

Sustainable agriculture practices such as the use of compost, manures, cover crops, legumes, and crop rotations received mixed reviews. A shortage of compostable material, and re-inoculation of plant pathogens from compost were major concerns. Some farmers recognized the importance of cover crops and crop rotations while others felt that there are not adequate financial returns for the costs. Several agents explained that cover crops are a hard sell to farmers who “*want their land to be productive all the time,*” and are trying to cut costs.

Creative rotation schemes for Vidalia onions

Vidalia onions, one of the most profitable vegetable crops in Georgia, are often planted on the same land year after year. Both conventional and organic onion farmers have struggled to find good rotation crops that can maintain profits while being compatible with available farm equipment and infrastructure. One new farmer to the area (designated as an “innovator” in this study) made the suggestion that carrot growers and onion growers (both grown in monocultures) should rotate (swap) land to allow the land to recover. This suggestion is a good example of the importance of innovators in the diffusion of new practices, and presents an opportunity for farmer driven participatory research.

Perceptions of Certified Organic Production

Farmers expressed both interest and skepticism towards certified organic production. Many anticipate organic production will become increasingly mainstream, attributing this expansion to both consumer demand and the availability of new organically approved inputs. This “input substitution” perspective was counter balanced with views that

organic production should be strongly differentiated from conventional with comments such as “if you’re gonna call it organic you don’t need to be using chemicals,” and “use nature’s own stuff.” Many farmers also supported strong regulations and maintaining a high degree of integrity for organic production. This finding was surprising and indicates the importance farmers place on fairness and honesty in agricultural marketing and maintaining a premium for quality products. However, farmers did not believe that organic production was cheaper or required less input costs than conventional production and remained unconvinced that it is practical or profitable to adopt organic production in this region due to problems such as weeds and pests.

Survey Results

Ninety-seven farmers responded to the survey (28%) with 77 surveys (22%) appropriate for analysis. Farmers demonstrated strong interests in most sustainable agriculture practices included in the survey (19 of 22 items received a majority of “interested” responses).

Two of the most significant findings of the survey revealed that 78% of respondents demonstrated interest in considering one or more sustainable practices, and 67% of respondents expressed interest in Extension developing new publications for organic fruits and vegetables (Figure 2).

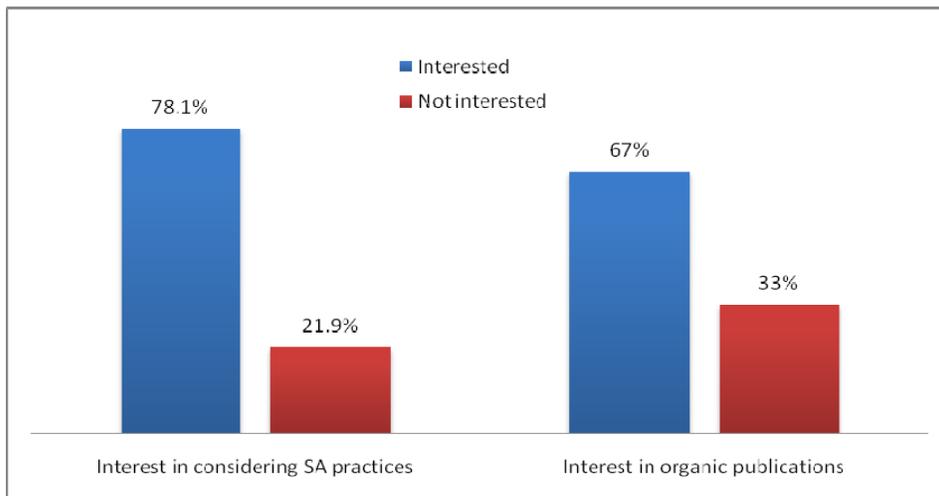


Figure 2. Percentage of respondents demonstrating interest in considering one or more sustainable practices and interest in seeing Extension develop new publications for organic fruit and vegetables.

Fuel conservation, water conservation, and improving soil fertility and plant nutrition with reduced inputs received the highest interest of all practices (greater than 90% interested). Interest in specific sustainable production practices (Figure 3) also emphasized alternative weed control and optimizing crop rotations. Younger farmers tended to have greater interest in “workshops on how to sell to institutions, specialized retailers and procurement companies,” compared to older farmers ($p=0.15$).

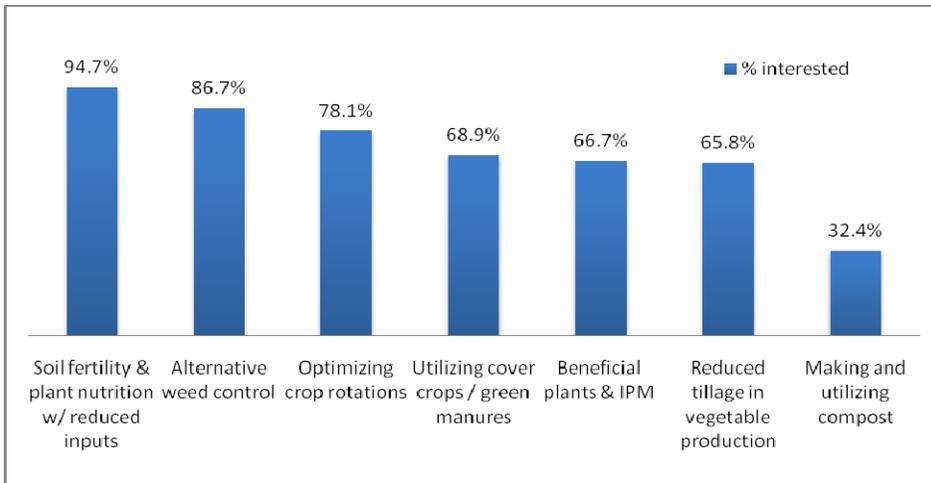


Figure 3. Percentage of respondents interested in training opportunities and resources for specific sustainable agriculture production practices.

All six organic agriculture variables received relatively lower interest scores overall (less than 50%) for information on organic crop types, organic production research, transition strategies and farm tours to organic farms. However, 75% of farmers in the Southeastern region expressed interest in organic production, and 64% were interested in transition strategies to organic. As production of organic Vidalia onions in this region has grown in recent years, nearby farmers are increasingly interested in learning about organic practices. Southeastern respondents also expressed extremely high interest in organic publications (86% interested), and specifically for organic production information (87% interested).

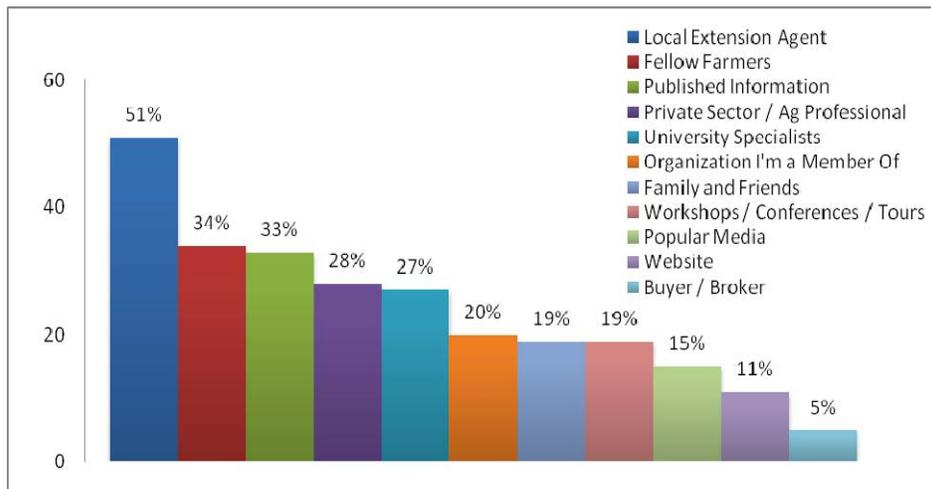


Figure 4. Percentage of respondents who “often” obtain sustainable agriculture information from the following sources.

Local extension agents were the most frequently encountered source of information on sustainable agriculture, followed by fellow farmers and published information (Figure 4). Fifty percent of smaller farms (<20 acres) also frequently encounter sustainable

agriculture information from organizations in which they are members ($p=0.032$), suggesting small farmers may be more involved with organizations that emphasize sustainable agriculture. Farmers with more crop diversity (>6 crops) are less likely to use extension as a source of sustainable agriculture information with less than 25% using this source often ($p=0.001$).

Respondents showed a high response to market variables as an influence on their interest in sustainable agriculture practices. Greater than 75% of all respondents agreed that they would consider adoption of sustainable agriculture if cost of production showed profit, if there was a price premium, if research showed a growing consumer market, or if they saw practices working on another farm.

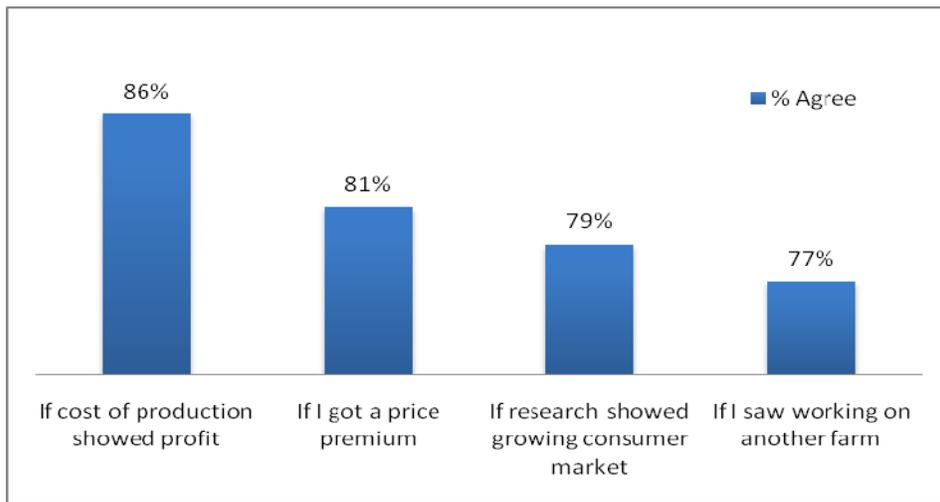


Figure 5. Respondents' likelihood to consider adoption of sustainable agriculture.

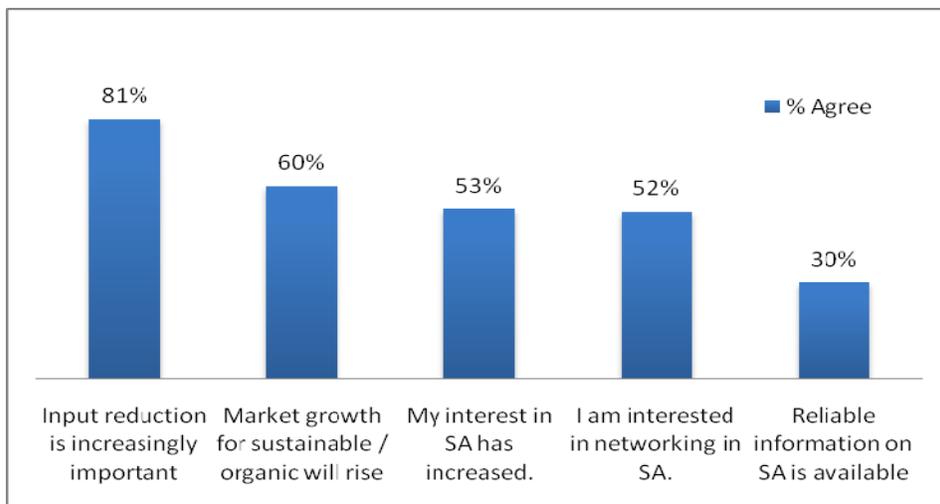


Figure 6. Respondents' perceptions of sustainable agriculture.

Results were mixed on perceptions of sustainable agriculture (Figure 6) with farmers recognizing that input reduction is increasingly important but not as certain of their own interest, or the likelihood that sustainable markets will grow. Farms smaller than 100 acres were twice as likely to believe sustainable agriculture information is readily available (> 80% agree) compared to larger farms ($p=0.002$). This may indicate different information channels for these two groups, or different definitions of sustainable agriculture. Farms <500 acres are also more likely to be interested in networking with other farmers regarding sustainable agriculture than larger farms (>90% vs. 60%, $p=0.01$)

Conclusions

Conventional fruit and vegetable farmers in South Georgia expressed significant interests in a wide array of sustainable agriculture practices, and expressed a willingness to consider adoption, especially if market data demonstrates increased economic opportunities. However, only 30% of respondents agreed that clear/reliable information about sustainable agriculture is readily available, and there still appears to be widespread confusion regarding how sustainable agriculture is defined. Respondents indicated that they rely on Extension agents for sustainable agriculture information. Because extension agents do not feel that adequate research is available to support recommendations for sustainable agriculture (particularly for small-scale farms) there appears to be an “information gap” between information demands and information availability.

The College of Agricultural and Environmental Sciences at UGA along with the College of Agriculture and Allied Sciences at Fort Valley State University are working to develop better information for county agents. The formation of an Organic Production Team, consisting of county agents from both UGA and FVSU, specialists, researchers and farmers, that will receive special training will help bridge this gap in the organic production area. If funded, a new SARE Research and Education proposal targeting vegetable crop rotations (which survey respondents identified as a top interest area), will help close this gap. The new Sustainable Agriculture website, a new publication on the economics of leguminous cover crops for nitrogen, and a presentation with speaker notes on success with cover crops are other examples of additional new resources to meet these information needs.

Small farms generally expressed greater interest in sustainable practices and networking opportunities than larger farms. Strategies for future programming with smaller farms should consider targeting member organizations. Extension is working closely with Georgia Organics to provide training at their annual conference and other workshops. The various workshops and farm tours funded by Southern SARE have been and will continue to be an effective mechanism to reach this audience.

The study provided valuable information as Extension prioritizes and develops programming to meet the needs of fruit and vegetable growers interested in sustainable agriculture practices. Results will be shared with administrators and specialists to document stakeholder’s needs for new types of training.

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