Organic Perspectives: Understanding the Views of Florida Consumers, Specialty Crop Farmers, and Retailers

Report by Florida Certified Organic Growers & Consumers, Inc.

September 2011

Supported by a grant from the Florida Department of Agriculture and Consumer Services

TABLE OF CONTENTS

Acknowledgements

This project was made possible through a Specialty Crop Block Grant from the Florida Department of Agriculture and Consumer Services (FDACS). We thank FDACS sincerely for the opportunity to conduct this work. We are very thankful also for the following individuals' cooperation implementing this project. Bob Hochmuth (UF/IFAS NFREC-Suwannee Valley), Linda Landrum (UF/IFAS NFREC-Suwannee Valley), Mary Keith (UF/IFAS Hillsborough County Extension) and Alicia Whidden (UF/IFAS Hillsborough County Extension), for their assistance organizing focus groups and for their valuable contributions during the meetings; Tawainga Katsvairo (BUC Technologies) for assistance developing and administering the producer questionnaire; Walt Land (FDACS), for making the producer and consumer online questionnaires accessible from the FDACS website; Phil Valentine (New Leaf Market) and John Russo (Ever'man Natural Foods), for facilitating consumer surveying in their stores; Cheryl L. Brown (City of Jacksonville) and Denise Holdridge (City of Orlando), for providing meeting venues for consumer focus groups; Gene McAvoy (UF/IFAS Hendry County Extension), Jim DeValerio (UF/IFAS Bradford County Extension), and Jessica Sullivan (UF/IFAS Osceola County Extension), for their help announcing and disseminating online producer questionnaires to their email lists; Elena Toro (UF/IFAS Suwannee County Extension) and Steve Gaul (UF/IFAS Nassau County Extension); and Stephen Gran (Hillsborough County Agricultural Industry Development Program), for their participation and contributions at the Live Oak and Seffner farmer focus groups, respectively.

Finally, we thank the farmers, citizens, and retail grocery representatives who took the time to share their experiences, challenges and aspirations with us.

About Florida Organic Growers

Florida Organic Growers (FOG) is a 501(c)(3) non-profit organization that has been promoting and supporting organic agriculture and healthy and just food systems since 1987. In addition to various education and outreach activities, FOG operates Quality Certification Services (QCS), a USDA-accredited fee-for-service organic certification agency.

Executive Summary

Introduction

Florida Organic Growers (FOG) began a comprehensive specialty crops research project in March 2009, made possible by a grant from the Florida Department of Agriculture and Consumer Services (FDACS).

The full report, available on the FOG website, conveys, interprets, and synthesizes information collected from Florida farmers, consumers, and large grocery chains—all key actors in Florida's specialty crops industry—and provides two core recommendations with specific strategies that Floridians can take to advance our state's agricultural and food systems.

This information may interest farmers, citizens, agricultural service providers, lawmakers, regulators, entrepreneurs, and retailers and distributors who are committed to expanding the availability of Florida-grown specialty crops, strengthening farmers' viability, and building Florida's agricultural economy for sustainability.

A goal of this work has been to better understand and to bring into focus the common interests and opportunities shared by farmers, consumers, and grocery retailers so that the advancement of Florida's farm-to-table food economy can begin in earnest. Maximizing and sustaining the economic, environmental, and social benefits of Florida agriculture will require commitment and follow-through from conscientious citizens, forward-thinking corporations and entrepreneurs, expert and beginning farmers, farmer support agencies and institutions, and policymakers and regulators throughout Florida. This report aims to advance cooperation and action among specialty crop stakeholders and inspire Floridians to play a part in building Florida's agricultural and food systems to their fullest potential.

Specialty crops

Specialty crops are defined by the Specialty Crop Competitiveness Act of 2004 and the Food, Conservation, and Energy Act of 2008 (2008 Farm Bill) as, "fruits and vegetables, tree nuts, dried fruits, horticulture, and nursery crops (including floriculture)" (USDA-AMS, 2011a).

Florida's specialty crop industry

Florida's major specialty crops include bell pepper, blueberries, cabbage, cucumber, grapefruit, oranges, potatoes, snap beans, squash, strawberries, sweet corn, tangerine, tomato, and watermelon. Florida ranked first in the U.S. in 2008 for the production value of oranges, grapefruit, tangerines, sugarcane, squash,

watermelons, sweet corn, fresh-market snap beans, fresh-market tomatoes, and fresh-market cucumbers (FDACS, n.d[a]).

Organic agriculture

The USDA's National Organic Program (NOP), the federal regulation which governs organic farming, handling, and processing, defines organic production as a system that is managed, "to respond to site-specific conditions by integrating cultural, biological, and mechanical practices that foster cycling of resources, promote ecological balance, and conserve biodiversity."

Benefits of organic agriculture

By building soil organic matter, organic farming practices can improve soil qualities that directly benefit crop production such as moisture holding capacity, nutrient exchange capacity, and soil structure (Bellows, 2002; Comis, 2007; Liebig & Doran, 1999; Lotter, Seidel, & Liebhardt, 2003; Newman, Wright, Mackowiak, Scholberg, & Cherr, 2011). These improved soil qualities can reduce irrigation and fertilizer needs. Long-term research comparing organic and conventional cropping systems demonstrates that organic systems are more resilient during times of stress, such as drought (Lotter et al., 2003). Other benefits include reduced nitrate leaching (Bellows, 2002; Kramer, Reganold, Glover, Bohannan, & Mooney, 2006), positive effects on beneficial insects (Garratt, Wright, & Leather, 2011), and increased abundance and number of species of birds, mammals and invertebrates present on farms (Bengtsson, Ahnstrom, & Weibull, 2005; Hole, Perkins, Wilson, Alexander, Grice, & Evans, 2009).

Because organic farming prohibits most synthetic pesticide use, it minimizes pesticide exposures of farmers, farmworkers, citizens and bystanders who work on or reside near farms, and organic production minimizes pesticides in water and food (Lu, Barr, Pearson, & Waller, 2008; Lu, Schenck, Pearson, & Wong, 2010; Lu, et al., 2006; Riederer, Bartell, Barr, & Ryan, 2008).

Organic market opportunity

U.S. sales of organic foods jumped from $3.6 billion in 1997 to $21.1 billion in 2008, with an annual growth rate of between 12 and 21 percent during this period (Greene, Dimitri, Lin, McBride, Oberholtzer, & Smith, 2009). Over the same period, organic foods, previously sold primarily through natural food stores, became commonplace in mainstream grocery stores (Greene et al., 2009). In 2008, 69 percent of U.S. consumers purchased organic products. In 2010, 54 percent of organic sales were through mass market retailers, such as warehouse club stores and mainstream supermarkets, while 39 percent were through natural food stores (OTA, 2011). Fruits and vegetables are the largest category of organic sales (Greene et al., 2009).

Organic—a miniscule part of U.S. agriculture

Despite growing consumer demand for organic products, increases in U.S. organic production and certified organic farmland are not keeping up and U.S. imports of organic foods from abroad are increasing. Florida trails other states in terms of the number of certified organic farms and total organic crop acreage (Greene et al., 2009).

Previous research has found that many conventional farmers consider the opportunities of organic production and has identified marketing and production challenges that seem to prevent conventional farmers from adopting certified organic production (Johnston, 2010; Strochlic and Sierra, 2007; York, Lau, Hanagriff, & Constance, 2007). This helps explain why the growth of U.S. organic agriculture is not keeping up with consumer demand for organic foods.

Transitioning to organic

Organic regulations require that land previously farmed using prohibited materials, including most synthetic fertilizers and pesticides, must be three (3) years removed from the application of such materials before crops harvested from the land can be sold, labeled, or represented as organic. "Transitional" is the term commonly used to describe farms that have completely adopted NOP-compliant production and handling practices but are not eligible for organic certification because insufficient time has passed since crop production inputs prohibited by organic regulations were used.

Project purpose

The objectives of this project were to increase understanding about:

- Key production and marketing challenges experienced by Florida specialty crop farmers
- Farmers' views and important factors about transitioning to organic certification
- Possible barriers that impact farmers' viability and successful adoption of organic production practices
- Consumers' views about Florida specialty crop agriculture and produce, including retail marketing of organic and transitional produce
- Grocery retailers' buying practices, and views about market opportunities for Florida-grown specialty crops including transitional produce

FOG anticipated that by gaining a greater understanding of these topics, Florida agriculture stakeholders would be strengthened in efforts to address barriers that limit the viability and success of Florida specialty crop farmers, expand organic farming and the use of sustainable agricultural practices statewide, improve consumer access to organic and transitional produce, and develop a statewide food system with enhanced economic potential and resiliency.

Methods

Information was collected from Florida specialty crop farmers and Florida residents who purchase specialty crops. Research among farmers and consumers was performed using self-completed questionnaires and focus group meetings. FOG also met with representatives of four major grocery chains that together operate more than 860 supermarkets in Florida and more than 1,600 stores in the Southeast.

Producer and consumer focus groups

FOG staff conducted and recorded five focus group meetings. FOG coordinated two consumer focus groups and collaborated with University of Florida IFAS Extension for two producer focus groups and one consumer focus group. FOG provided UF/IFAS faculty with general meeting information and participation requirements, and faculty coordinated assembly of the groups. Participants of the two consumer focus groups organized by FOG were selected according to the order of responses to solicitations posted by FOG to an online network of classified ads.

Producer and consumer surveys

Self-completed farmer and consumer questionnaires were developed and administered by the project team at various producer and consumer venues in Florida. Florida specialty crop growers were surveyed at farmers markets, producer association meetings, and agricultural conferences and trade shows held in different areas of the state. Consumers were surveyed at Palatka's Azalea Festival, at farmers markets in Gainesville and Tallahassee, and at cooperative grocers in Tallahassee and Pensacola. In addition, farmers and consumers completed online surveys.

Retailer meetings

FOG staff collected information about Florida grocery chains' purchasing practices and perspectives about marketing Florida-grown specialty crop products, including produce grown by farmers transitioning to organic certification. Summaries from FOG's discussions with Florida retailers are included and discussed in relation to findings of producer and consumer research.

Farmer Results

Survey

Self-completed surveys were collected from Florida specialty crop farmers, representing 35 of Florida's 67 counties. General information about producers' farms was collected as well as more detailed information about growers' production and marketing.

Almost half of the farmers participating in the survey were age 56 or older, while about 30% were between 46 and 55 years of age. Farmers between 35 and 45 years of age comprised 12% of respondents, and farmers 35-years-old or younger comprised 10% of respondents. Half of the respondents reported less than 10 years of farming experience, qualifying them as beginning farmers according to USDA definition. Respondents reported growing an array of specialty crops, including annual vegetables and specialty herbs, berry crops, citrus, pecans, and chestnuts. Among 86 respondents, 21 farmers reported that part of their operation is certified organic.

Production and marketing strengths and challenges

Pest pressure, which includes insect, disease, weed and wildlife pressure, was the biggest challenge reported. This was followed by making a profit from farming, with farmers citing increasing input costs, land costs, the current state of the economy, and marketing challenges as factors. Among those who reported government regulations as a challenge, Florida's food safety regulations regarding tomatoes was a primary example given. Strengths that farmers reported included the quality of their specialty crop produce and their direct contact with customers. Other strengths included being certified organic or making a claim of no insecticide use.

Resources Used

Growers indicated that other farmers are their primary source for production and marketing information, followed by extension agents, UF's *Vegetable Production Handbook for Florida*, internet resources, FDACS, and producer associations. Respondents said that more support from Cooperative Extension and more research is needed, especially with regards to organic production. Financial support through grants and credit was cited as a resource need, and farmers also indicated a need to create farmers' networks or conferences.

Transitioning to Organic Production

More than 60% of survey respondents have considered transitioning to organic farming. Six farmers with certified organic farm land indicated an interest in transitioning additional land. Factors for considering organic production include personal concern for the environment, eliminating or reducing synthetic pesticides, building the soil with organic practices, and increasing farm income. The most common reasons given for not transitioning were difficulty controlling pests, weeds, and diseases organically, burdensome recordkeeping requirements, high organic certification costs, high costs of organic inputs, lack of knowledge on how to farm organically, and low yields in organic farming.

Focus groups

Two farmer focus groups were conducted. Participants in central Florida reported operations ranging from 35 to 275 acres. The majority grew strawberries as their main crop. Participants in the north Florida focus group reported growing vegetables and herbs, blueberries, blackberries, strawberries, and stone fruits on small acreages, ranging from ¼ acre to 4 acres. One participant in each group had experience producing certified organic crops and one farmer had active conventional/certified organic split production.

Profitability

Farmers are challenged to be profitable. Central Florida focus group participants reported that it is becoming less profitable every year to produce strawberries, melons, and vegetable crops, citing a cost-price squeeze between the prices they receive for their produce and steadily increasing costs of diesel fuel, drip irrigation supplies, plastic mulch, chemicals, and labor. Production costs are increasing at a faster pace than crop prices. Most of the north Florida meeting participants work off-farm jobs and indicated this to be an economic necessity.

Production challenges

Rising production costs, including costs associated with regulatory compliance, were a challenge cited by focus group participants. Specific water use and pesticide regulations were cited by one focus group. Another issue described as a "crisis" for farmers was U.S. immigration policies and enforcement, and how they impacted labor. Farmers in north central Florida also expressed challenges hiring labor due to the region's low population density and sparsely located farms. Farmers receive low prices for their produce, which translates into low wages for farmworkers, which makes attracting workers difficult.

Marketing challenges

Marketing challenges varied for farmers in different regions of the state. The lack of markets in north central Florida was a significant challenge for small-scale specialty crop farmers who don't earn sufficient income at area farmers markets and who do not access larger markets, such as Jacksonville. Central Florida strawberry producers emphasized numerous challenges they have selling to wholesale markets, and described the detrimental impacts they face from produce imports that saturate domestic markets and depress prices. The central Florida group also described the expanded role they felt the FDACS *Fresh from Florida* program could play in facilitating their marketing success.

Going organic

Focus groups expressed interest in organic production and indicated the importance that having more information and technical assistance could mean to their considerations about pursuing organic production. Farmers also cited concerns that seem to deter them from adopting organic management. The groups stated that they don't know how organic farming can be profitable. Farmers also doubted that they could control pests and diseases with organic methods. The high cost and lack of access to organic inputs was raised in the north Florida focus group. The c entral Florida group indicated that increasing regulations on pesticides, especially soil fumigants, may be what influences more farmers to go organic.

Consumer Results

Survey

A total of 329 Florida residents responded to self-completed consumer surveys developed by FOG. The descriptive information provided by the respondents was analyzed. In addition, because of the nature of the different survey venues, the surveys were separated into two groups and compared to assess differences and

similarities. Group 1 consists of 180 responses collected at farmers markets and natural food cooperative grocers, and Group 2 consists of 149 responses obtained via the online survey and by intercept surveying at the Palatka Azalea Festival.

Views about organic

A large majority of respondents showed a preference for organic produce, especially organic produce that is grown locally. Consumer concern about pesticide residues was apparent from 52% of Group 1 responses and 31% of Group 2 responses that agreed with the statement "locally produced fruits and vegetables may have pesticide residues, unless they're organic." Prices of organic products were viewed by 37% of Group 1 and Group 2 respondents as too expensive, while 79% of Group 1 and 51% of Group 2 respondents agreed that there are costs associated with conventional agriculture that are not reflected in the prices charged for conventional produce at the grocery store. Government incentives to support Florida farmers to use organic practices were viewed favorably in 85% of Group 1 and 48% of Group 2 responses. In addition, respondents overwhelmingly agreed with the statement, "Floridians should support a label that identifies Florida produce grown without synthetic pesticides," possibly indicating support for transitional product labeling in the retail marketplace.

Locally grown produce

Nearly 75% of Group 1 and Group 2 survey respondents indicated the importance they place on the availability of fruits and vegetables labeled *Fresh from Florida* and the same proportion say Florida-grown fruits and vegetables are fresher than those from out of state or overseas. However, while consumers are overwhelmingly interested in fresh, local produce, 45% of Group 1 and 63% of Group 2 respondents said that locally produced fruits and vegetables are not labeled as such. The vast majority of respondents agreed that Floridians should strive to buy fruits and vegetables that are Florida-grown, and 90% of Group 1 and Group 2 agreed that Florida grocery stores should carry a wider variety of Florida-grown fruits and vegetables.

Where consumers buy produce

Among consumers who completed questionnaires in natural food cooperative grocers in Tallahassee and Pensacola (Group 1 respondents), 52% said they purchase fruits and vegetables at cooperative grocers always or almost always. In contrast, half of Group 2 respondents buy their fruits and vegetables at supermarkets always or almost always, while 10 percent buy fruits and vegetables at cooperative grocers always or almost always. More than 55% of Group 1 and 41% of Group 2 respondents said they shop at farmers markets at least fairly often.

Focus groups

FOG staff conducted three, 2-hour consumer focus groups. In Seffner (Hillsborough County), participants were assembled from respondents to a UF/IFAS announcement. The second and third focus groups were organized by FOG and the meetings conducted at city halls in Jacksonville (Duval County) and Orlando (Orange County).

Considerations when buying fruits and vegetables

Pesticide residues on produce are a top concern. Groups also expressed common concern about knowing the origin of produce, adding that this information is not always made available to consumers in the retail marketplace. The three groups indicated that countries the U.S. imports from may not have strict regulations on pesticide use. Groups expressed the importance of produce qualities (freshness, taste, color, size) while also voicing concern over additives that may be used to enhance produce quality. Also, convenience and price were important concerns expressed by the groups.

Participants were interested in obtaining produce from local growers by shopping at farmers markets and produce stands. They expressed challenges in shopping at farmers markets and concern that some vendors sell produce that is sourced from global distribution channels. Concern over unknown risks of consuming genetically engineered (GMO) foods was raised during two of the meetings.

Government role

Groups were informed that "government" could apply to local, state, or federal levels. The need for public education about food and farming was a common theme and groups suggested that government should have a leading role. Informing the public about pesticide use in agriculture was one of the key areas groups suggested government should have a larger role in. Participants also saw a larger role for FDACS' *Fresh from Florida* program as important in helping to advance local agriculture in the state.

The role of government was also raised in relation to consumers' sense that "free trade" is detrimental to U.S. farmers. Two of the groups suggested that government could play a role in supporting farmers' transition to organic production, such as through tax breaks or subsidies.

Thoughts about organic and transitional

Groups showed a preference for organic produce, with most participants indicating that organic products are available where they shop and many stating that they make an effort to purchase organic items. Preference for organic was associated with concerns to avoid consuming pesticides, additives and genetically engineered food. Groups showed general but not unanimous understanding that certain pesticides are allowed (used) in organic production.

A sound definition of transitional agriculture was offered in each of the three focus groups. Members of each group expressed awareness that transitional means moving from conventional to organic status. Focus groups indicated support for labeling that identifies transitional Florida specialty crops in the marketplace, while expressing some concerns about a transitional label, as well as some suggestions about how transitional produce could effectively be marketed. Groups cited the importance of educating the public about the meaning of organic and conventional agriculture.

Grocery Retailer Results

FOG staff met with representatives of Publix Super Markets, Inc., Sweetbay Supermarket, Whole Foods Market, Inc., and Winn-Dixie Stores, Inc. between May 2010 and Nov. 2010. These retailers comprise about 860 retail store locations in Florida and hundreds more locations in neighboring southeastern states. Meeting participants discussed topics related to expanding profitable markets for specialty crops grown by Florida farmers, including views on marketing transitional agricultural produce.

Three of four grocery chains reported that consumer demand for organic products is increasing. One company indicated that demand for organics was flat but that the company has employed marketing strategies that have encouraged organic sales to increase. All the companies noted strong demand for local products, when such products are available. Companies expressed doubts about marketing specialty crops as "transitional" while indicating interest in exploring marketing options that could increase transitional growers' income. Three companies expressed commitment to forming direct relationships with Florida farmers, and one which prefers to work through distributors said they would not rule out working directly with farmers.

Discussion

Findings about production and marketing challenges faced by Florida farmers builds awareness and can inform actions to increase growers' viability, make farming a more feasible and likely career choice for beginning farmers, and increase the sustainability of Florida agriculture.

Although farmers are exploring the opportunities of organic production, they express a number of concerns that discourage them from starting organic operations. Conventional farmers indicate that supportive policies, access to profitable markets, and access to significant technical support and comprehensive information about organic production, economics, and marketing may be necessary before they are willing to adopt organic farming.

Florida consumers demonstrated strong preference for organic produce, especially locally grown organics. Consumers likewise exhibited overwhelming support for Florida-grown produce and the *Fresh from Florida* label. Concerns were expressed about pesticide residues on produce and the negative impacts of pesticides on the environment. There is indication that Florida consumers may support a transitional produce label. They may also support government programs to incentivize adoption of organic practices by farmers.

A majority of Florida consumers purchase fruits and vegetables from large grocery chains and wholesale superstores. The produce purchasing practices and motivations of these businesses are fundamental to increasing in-state availability of Florida-grown specialty crops and improving the viability of Florida farmers. Florida grocery chains and superstores may represent one of the most consistent long-term markets for large numbers of Florida farmers.

Recommendations

1. Expand and enhance in-state markets for Florida-grown specialty crops.

Strategy 1.1
Expand direct collaborations between farmers and grocery chains to develop *Fresh from Florida* retail produce sections.

Strategy 1.2
Explore possibilities for introducing an *Organic from Florida* promotional label campaign to join the Florida Department of Agriculture and Consumer Services (FDACS) *Fresh from Florida* Agricultural Promotion Campaign.

Strategy 1.3
Develop policies and programs to make Florida's schools a reliable, profitable market for specialty crop farmers, including transitioning and certified organic farmers who may have higher production costs than conventional producers.

Strategy 1.4
Enhance farmers markets utilizing tested strategies to expand patronage and benefits to community members, and expand the role of markets as educational venues.

Strategy 1.5
Develop farmer-controlled production and marketing associations that can increase small and mid-size farmers' access to more and larger markets and reduce individual grower-members' business costs and risks.

Strategy 1.6
Expand trainings for farmers on marketing, business skills, and risk and credit management.

Strategy 1.7
Establish a platform by which producers, buyers, consumers, policymakers, and other stakeholders can convene and formulate policy recommendations that will promote sustainability of the state's food system and increase opportunities for in-state marketing of specialty crops, including organic and transitional crops.

2. Research, develop and implement state and local initiatives to increase the number of farms and total acreage in Florida certified to USDA National Organic Program standards.

Strategy 2.1
Expand long-term, multi-disciplinary organic farm system (agroecological) research encompassing production, marketing, and economics.

Strategy 2.2
Promote farmer to farmer networking to encourage learning and sharing that may increase organic farming knowledge, skills, and confidence among Florida's specialty crop growers, including beginner farmers.

Strategy 2.3
Establish an interactive networking platform for research applicable to Florida's organic farmers to better provide useful, easily accessible and current information.

Strategy 2.4
Enhance county- and state-level funding for Florida's land grant universities' sustainable and organic agriculture research and extension programs and activities.

Strategy 2.5
Explore local and state incentives to increase the number of organic farms in Florida and Florida's total certified organic acreage.

Strategy 2.6
Initiate policies and actions at state and municipal levels to promote the utilization of available resources and suitable wastes as feedstock materials for large-scale composting operations that can supply area farmers.

Conclusions

We found common interests among farmers, consumers, and grocery retailers to develop Florida's organic agriculture industry and expand and enhance in-state markets for Florida-grown specialty crops.

Numerous challenges and obstacles that limit specialty crop agriculture's benefits to Florida residents can be overcome with policy commitments and close collaboration among Florida agriculture's many stakeholders.

Organic Perspectives: Understanding the Views of Florida Consumers, Specialty Crop Farmers, and Retailers

Report by Florida Certified Organic Growers and Consumers, Inc.

Introduction

Specialty crops

Specialty crops are defined by the Specialty Crop Competitiveness Act of 2004 and the Food, Conservation, and Energy Act of 2008 (2008 Farm Bill) as, "fruits and vegetables, tree nuts, dried fruits, horticulture, and nursery crops (including floriculture)" (USDA-AMS, 2011a). This project essentially focuses on fruit and vegetable specialty crops, which are championed in USDA's new "My Plate"[1] message to, "*Make half your plate fruits and vegetables*."

Florida's specialty crop industry

Florida's major specialty crops include: bell pepper, blueberries, cabbage, cucumber, grapefruit, oranges, potatoes, snap beans, squash, strawberries, sweet corn, tangerine, tomato, and watermelon. In 2008, Florida ranked first in the U.S. in the production value of oranges, grapefruit, tangerines, sugarcane, squash, watermelons, sweet corn, fresh-market snap beans, fresh-market tomatoes, and fresh-market cucumbers (FDACS, n.d.[a]).

Driven by increasing consumer demand to obtain fresh, sustainably grown produce directly from farmers, the locally grown segment of the specialty crops industry has taken off, prompting such initiatives as USDA's Know your Farmer, Know Your Food, and indicating significant potential to create jobs and expand local economies (O'Hara, 2011; Swenson, 2006). The State of Florida's local food initiatives include its Farm to School program, the "Fresh from Florida" promotional campaign, and support for farmers markets (FDACS, n.d.[b]).

Organic agriculture

The USDA's National Organic Program (NOP)[2], the federal regulation which governs organic farming, handling, and processing, defines organic production as a system that is managed, "to respond to site-specific conditions by integrating cultural, biological, and mechanical practices that foster cycling of resources, promote ecological balance, and conserve biodiversity" (Electronic Code of Federal Regulations, 2010a).

---

[1] USDA's ChooseMyPlate.gov website: http://www.choosemyplate.gov/index.html

[2] The USDA's National Organic Program is authorized by the Organic Foods Production Act (1990) and was implemented in 2002 to govern the production and handling of all agricultural products marketed in the U.S. as "organic." The NOP is Title 7, Part 205 of the Code of Federal Regulations.

Benefits of organic agriculture

By building soil organic matter, organic farming practices can improve soil qualities that directly benefit crop production such as moisture holding capacity, nutrient exchange capacity, and soil structure (Bellows, 2002; Comis, 2007; Liebig & Doran, 1999; Lotter, Seidel, & Liebhardt, 2003; Newman, Wright, Mackowiak, Scholberg, & Cherr, 2011), which can reduce irrigation and fertilizer needs. Long-term research comparing organic and conventional cropping systems demonstrates that organic systems are more resilient during times of stress, such as drought. In the 21-year Farming Systems Trial at Rodale Institute, organic cropping systems performed significantly better than conventional systems in 4 out of 5 years of moderate drought. In severe drought, yields of organic systems were significantly higher than conventional (Lotter et al., 2003). The same trials show that organic systems have greater capacity to sequester carbon in soils, improving soil qualities and mitigating carbon losses to the atmosphere, a major factor in global climate change (LaSalle & Hepperly, 2008). Other benefits include reduced nitrate leaching (Bellows, 2002; Kramer, Reganold, Glover, Bohannan, & Mooney, 2006), positive effects on beneficial insects (Garratt, Wright, & Leather, 2011), and increased abundance and number of species of birds, mammals and invertebrates present on farms (Bengtsson, Ahnstrom, & Weibull, 2005; Hole, Perkins, Wilson, Alexander, Grice, & Evans, 2009).

Organic farming prohibits most synthetic pesticide use, and therefore minimizes pesticide exposures of farmers, farmworkers, citizens and bystanders who work on or reside near farms, and organic production minimizes pesticides in water and food (Lu, Barr, Pearson, & Waller, 2008; Lu, Schenck, Pearson, & Wong, 2010; Lu, et al., 2006; Riederer, Bartell, Barr, & Ryan, 2008).

Organic market opportunity

According to the *Nutrition Business Journal,* U.S. sales of organic foods jumped from $3.6 billion in 1997 to $21.1 billion in 2008, with an annual growth rate of between 12 and 21 percent during this period (as cited in Greene, Dimitri, Lin, McBride, Oberholtzer, & Smith, 2009). This impressive growth coincided with the Federal Register's publication in 2000 of nationalized standards for organic farming, product handling, and processing, and full implementation of national organic regulations in October 2002.

Over the same period, organic foods, previously sold primarily through natural food stores, became commonplace in mainstream grocery stores (Greene et al., 2009). According to the Organic Trade Association (OTA), in 2010, 54 percent of organic sales were through mass market retailers, such as warehouse club stores and mainstream supermarkets, while 39 percent were through natural food stores (OTA, 2011). The Hartman Group reports that, in 2008, 69 percent of U.S. consumers purchased organic

products (as cited in Greene et al., 2009, p.3). Fruits and vegetables are the largest category of organic sales, followed by dairy products (Greene et al., 2009).

Organic—a miniscule part of U.S agriculture

Between 1997 and 2005, U.S. organic crop acreage more than doubled, but the organic market expanded much more rapidly (USDA-ERS, 2010; Greene et al., 2009). Despite growing consumer demand for organic products, increases in U.S. organic production and certified organic farmland are not keeping up (Cantor & Strochlic, 2009; Greene et al., 2009) and U.S. imports of organic foods from dozens of countries are increasing (Greene et al., 2009).

Florida lags behind other states in terms of the number of certified organic farms and total organic crop acreage. According to ERS, between 2002 and 2008, the number of certified organic farms in Florida has ranged from a low of 63 (2006) to a high of 113 (2008). In 2008, Florida had a total of 11,493 certified organic acres, 31st among U.S. States. For reference, in 2008, California, which leads the nation in both the number of certified organic farms and organically cropped acreage, had 2,887 farms and 430,724 acres (excluding pasture) certified organic; Virginia had 120 farms and 13,353 acres certified organic, whereas Georgia had 67 farms and 2,711 acres, and New York had 803 farms and 131,932 acres certified organic (USDA-ERS, 2010).

FDACS reports that, in 2008, Florida had 47,500 commercial farms, totaling 9.25 million acres (FDACS, n/d). Thus, in 2008, Florida's certified organic sector accounted for 0.2% of all Florida farms and 0.1% of Florida's total cropped acreage.

Overall, certified organic crop land accounts for only 0.5% of all U.S. cropland, while 0.5% of all U.S. pasture is certified organic (Greene, et al., 2009). Observers have described marketing and production factors that help explain why the growth of U.S. organic agriculture is not keeping up with consumer demand for organic foods.

Marketing challenges

The lack of access to profitable markets is an obstacle to greater adoption of organic production (Cantor & Strochlic, 2009; DuPuis, 2006; Johnston, 2010; Strochlic & Sierra, 2007; USDA-ERS, 2010). Among split organic-conventional producers in California who reported their *hesitancy to transition* additional acreage, farmers' primary reason was concern over organic market "saturation." California farmers with split organic and conventional production who stated their *unwillingness to transition* any additional acreage, said they based their decisions on prior losses they experienced in the organic market (Strochlic & Sierra, 2007). Among conventional producers in New York who indicated, "no interest" in transitioning to organic production, 58% responded that finding reliable markets for their organic

products is a barrier to pursuing organic production, while other marketing barriers identified were: difficulties obtaining organic price information (58%), and uncertainty about obtaining organic price premiums (71%), (Johnston, 2010).

DuPuis (2006) has stated, "[e]ven though the market for organic food may be expanding, smaller organic farmers are increasingly unable to gain access to the mainstream buyers that represent an increasingly large portion of the growing market[1]." Likewise, Cantor & Strochlic (2009) have explained that one of the main issues facing small farmers, whether organic or conventional, is that the U.S. food system is geared for larger farms, which makes it difficult for small farmers to succeed.

Production challenges

Conventional farmers also report production-related concerns about going organic, including high production costs, challenges controlling pests, weeds, and diseases, low yields during the transition period, and high labor costs (Johnston, 2010; Strochlic & Sierra, 2007; York, Lau, Hanagriff, & Constance, 2007).

Transitioning farmers may experience lower crop yields as they learn organic farming and as soils and cropland regain essential functions such as soil nutrient cycling and pest-predator relationships necessary to realize the full potential of organic production (Bellows, 2002; Katsvairo, Wright, Marois, & Rich, 2007). Another major challenge for beginning organic growers is limited technical information and support compared to what exists for conventional growers (Greene, Slatterly, & McBride, 2010; Katsvairo et al., 2007, Strochlic & Sierra, 2007). Lagging organic research has been attributed to the complexity of organic farming systems, and the fact that agricultural researchers have historically been trained within disciplines rather than focusing on integrated systems (SARE Transitioning to Organic Production, n.d.; Magdoff, 2007).

Interest in adopting organic production

Although production and marketing challenges seem to prevent many conventional farmers from going organic, research has also found that many conventional farmers consider the opportunities of organic production. Studies among farmers in California, Texas, and New York found that between 40% and 60% of conventional producers have some level of interest in organic production (Johnston, 2010; Strochlic and Sierra, 2007; York, et al., 2007).

[1] Quote is from the Introduction (source not paginated).

Transitioning to organic

Organic regulations require that land previously farmed using prohibited materials, including most synthetic fertilizers and pesticides, must be three (3) years removed from the application of such materials before crops harvested from the land can be sold, labeled, or represented as organic. Farmers that exceed $5,000 in annual gross sales and intend to represent or sell their produce as "organic" are required to have their operation certified to organic standards by a USDA-accredited certification agency. Organic farmers that gross less than $5,000 annually are considered, "exempt" from the requirement to be certified but still must comply with NOP regulations, including maintaining records that demonstrate compliance (Electronic Code of Federal Regulations, 2010b).

Transitional is the term commonly used to describe farms that have completely adopted NOP-compliant production and handling practices but are not eligible for organic certification because insufficient time has passed since crop production inputs prohibited by organic regulations were used.

NOP regulations do not legally define "transitional." However, the National Organic Standards Board (NOSB)[1] adopted a "transitional product" recommendation in May 2002, in order to bring consistency to transitional certification requirements (USDA-AMS NOSB, 2002). In addition, USDA's Natural Resource Conservation Service (NRCS) describes "transitioning" farms eligibility to participate in its Environmental Quality Incentives Program (EQIP) "Organic Initiative," (USDA-NRCS, 2010) and the Conservation Stewardship Program (CSP) "Organic Crosswalk" (USDA-NRCS, 2009) The EQIP Organic Initiative was authorized by the 2008 Farm Bill to provide cost-share assistance specifically to organic and transitioning growers (USDA-NRCS, 2010).

Project purpose

The objectives of this project were to increase understanding about:

- Key production and marketing challenges experienced by Florida specialty crop farmers
- Farmers' views and important factors about transitioning to organic certification

[1] The Organic Foods Production Act of 1990, part of the 1990 Farm Bill, authorized the Secretary of Agriculture to appoint a 15-member National Organic Standards Board (NOSB). The Board's main mission is to make recommendations about whether a substance should be allowed or prohibited in organic production or handling, to assist in the development of standards for substances to be used in organic production, and to advise the Secretary on other aspects of the implementation of the OFPA. The NOSB defines "transition" as, "[t]he act of establishing organic management practices in accordance with the [Organic Foods Production] Act…" and "transition period" as, "[t]he time between the start of organic management and when an operation or portion of an operation is eligible for organic certification." (NOSB, 2002)

- Possible barriers that impact farmers' viability and successful adoption of organic production practices

- Consumers' views about Florida specialty crop agriculture and produce, including retail marketing of organic and transitional produce

- Grocery retailers' buying practices, and views about market opportunities for Florida-grown specialty crops including transitional produce

We anticipated that by gaining a greater understanding of these topics, Florida agriculture stakeholders would be strengthened in efforts to address barriers that limit the viability and success of Florida specialty crop farmers, expand organic farming and the use of sustainable agricultural practices statewide, improve consumer access to organic and transitional produce, and develop a statewide food system with enhanced economic potential and resiliency.

Methods

I. Florida specialty crop farmer research

Research was conducted among Florida specialty crop producers between Aug. 2009 and June 2010 using focus groups and farmer-completed surveys.

A. Survey

A self-completed questionnaire was developed in order to increase understanding about Florida specialty crop growers' production and marketing experiences and views about organic production. The survey contained mostly multiple response and open-ended questions. Prior to use, a pre-test of the instrument was done by farmers whom FOG requested complete the survey and provide feedback. The survey was revised before and during data collection. Limitations of the survey due to use of multiple versions are noted below.

The survey was administered by FOG staff at Florida specialty crop producer venues, including: the Florida Small Farms and Alternative Enterprises Conference, Kissimmee, Aug. 1-2, 2009; Agritech (Florida Strawberry Growers Association annual educational seminar and tradeshow) Plant City, Aug. 18-19 2009; Florida Blueberry Growers Association Fall Blueberry Short Course, Inverness, Oct. 22, 2009; Florida Ag Expo, Balm, Oct. 28, 2009; Florida Grape Growers Association Annual Conference, Daytona Beach, Jan. 8, 2010; and AgriTunity, Bushnell, Jan. 23, 2010. Surveys also were administered to farmers between Aug. and Sept. 2009 at farmers markets in Gainesville (Alachua County Farmers Market, Haile

Village Farmers Market, and Union Street Farmers Market) and Tallahassee (Downtown Marketplace, Growers Market at Lake Ella, Tallahassee Farmers Market at Market Square). Surveying at Tallahassee farmers markets was conducted by a contracted professional who also assisted FOG staff to develop the instrument.

In addition, the survey was uploaded using Kwik Surveys (http://www.kwiksurveys.com/) and made available online between Oct. 29, 2009 and mid-May, 2010. Availability of the online producer survey was announced through FOG's monthly E-news, through announcements sent by numerous Cooperative Extension faculty to their respective contact lists, and via links from the FOG and FDACS web pages, including a 6-week posting as a "Hot Topic" on the FDACS homepage, during March and April 2010.

B. Focus groups

Two farmer focus groups were conducted by FOG staff in collaboration with UF/IFAS faculty. The first was held April 26, 2010 at the Hillsborough County Extension Office in Seffner, with specialty crop farmers from the Plant City area. The second focus group was held June 18, 2010 at the North Florida Research & Education Center in Live Oak, with north Florida farmers participating. Collaborating UF/IFAS faculty announced the opportunity to specialty crop producers on their contact lists and filled the available slots based upon the order of responses, with about 10 participants being desired for each group. Prospective participants were informed that one farmer per household could participate and that each participant in the 2-hour focus group would receive a $100 stipend.

FOG staff moderated and recorded the discussions. At the start of each focus group, the moderator explained background information about FOG, the nature and goals of the research, focus group objectives and protocols, and individuals' rights as research participants. Participants were informed that their participation was completely voluntary and they may withdraw at any time. All participants signed informed consent forms. The moderator indicated he would use an outline that FOG staff prepared to guide the discussion, and encouraged participants to discuss the topics amongst themselves and, "have a good time." The moderator described his role as similar to an orchestra conductor, guiding the discussion so that participants play in harmony and provide their thoughts on the topics at hand. One or more IFAS faculty attended for the duration of each meeting.

Producer focus groups covered three main topics. *Growing fruits and vegetables in Florida* included the advantages and challenges that Florida farmers experience and their thoughts about transitioning to organic production; *Role of government and other institutions in Florida Agriculture* allowed us to collect growers thoughts on the impacts or potential impacts of various agencies on Florida specialty crop farming operations; and *Marketing Florida fruits and vegetables*, which provided opportunity to learn

about marketing challenges producers experience, growers' perspectives about the specialty produce concerns of consumers, and farmers' views about the marketing of transitional/organic specialty crops.

UF/IFAS collaborators verified the accuracy of focus group discussions recorded by FOG staff. Notes of focus group discussions were analyzed by FOG staff for repeating ideas and themes within and among the groups.

II. Florida Consumers

Information was collected from Florida consumers during 2009-2010 using self-completed surveys and focus groups.

A. Survey

A self-completed questionnaire was developed by FOG to shed light on consumers' views about Florida specialty crop production and marketing. The survey included four Likert-type statements dealing with (1) the importance consumers place on different types of produce; (2) how frequently the consumer buys different produce types; (3) how the consumer identifies with concerns related to agricultural production, marketing, and policy; and (4) how often the consumer buys produce at various types of market outlets. One additional item asked respondents to select all the situations they experience when attempting to purchase locally produced fruits and vegetables, from a list of experiences related to price, labeling, quality, and availability. The survey was tested and revised prior to data collection and test participants provided feedback that helped improve the survey.

Survey data were collected from Florida consumers through the following.

1) Online survey link on the FOG and FDACS websites using Kwik Surveys (http://www.kwiksurveys.com/). A survey link was placed on the FOG website in early Jan. 2010 and on FDACS' 'organic' webpage on Jan. 21, 2010. On or before March 3, 2010, following a request to FDACS that the survey link be accessible from a general (not organic-centered) web page, the survey link was placed on the FDACS homepage as a "Hot Topic." The consumer survey also was announced by Cooperative Extension emails to constituents.

2) Florida Azalea Festival. Intercept surveying conducted by FOG staff March 6, 2010, at the City of Palatka's annual springtime event.

3) Gainesville Downtown Farmers Market. Intercept surveying conducted by FOG staff January 20, 2010.

4) Alachua County Farmers Market. Intercept surveying conducted by FOG staff January 16, 2010.

5) Ever'man Natural Foods, Pensacola, Florida. Surveys, pens and a drop-box were placed in-store on or before March 11, 2010 through March 30, 2010.

6) New Leaf Market, Tallahassee, Florida. Surveys, pens and a drop-box were placed in-store on or before March 5, 2010 through (approximately) May 5, 2010.

B. Focus groups

FOG staff conducted three, 2-hour consumer focus groups. In Seffner (Hillsborough County), participants were assembled from respondents to a UF/IFAS faculty's announcement to an extension contact list. The second and third focus groups were organized by FOG and the meetings conducted at city halls in Jacksonville (Duval County) and Orlando (Orange County). Jacksonville and Orlando participants were selected from respondents to online announcements posted on *craigslist*[1] under the headings "Community" and "Gigs." Announcements stated that participants must be Florida residents that purchase fruits and vegetables, but provided no additional details and did not identify FOG as the agency conducting the research. The announcement informed prospective participants that one person per household was eligible and that each participant would receive $100 compensation. At the start of each meeting, FOG staff provided background information about the project and explained protocols for the group discussion. All participants signed informed consent forms.

Each meeting covered 4 topic areas: *Purchase of fruits and vegetables* aimed to establish the types of outlets that participants shop at for fresh produce, and factors important in deciding where to shop; *How fruits and vegetables are grown and handled* provided opportunity to learn participants' views about farming practices and produce quality concerns; the *U.S. agriculture and food system* allowed consideration of the larger food system of which Florida is a part; and *Organic and transitional fruits and vegetables*, included the availability of these items at outlets where participants shop, consumers' views about purchasing transitional and organic produce, what participants comprehend "organic" and "transitional" to mean, and groups' thoughts about promoting organic agriculture in Florida. The moderator used an outline that FOG staff developed to guide the discussion.

[1] Online classifieds: http://jacksonville.craigslist.org/ (Jacksonville); http://orlando.craigslist.org/ (Orlando)

UF/IFAS collaborators subsequently verified the accuracy of focus group discussions recorded by FOG staff. Notes of focus group discussions were analyzed by FOG staff for repeating ideas and themes within and among the groups.

III. Florida grocery retailer meetings

Between May 2010 and Nov. 2010, FOG staff met with corporate representatives of major grocery chains that purchase and market Florida specialty crops: Publix Super Markets, Inc. (746 Florida locations and 305 locations [combined] in Alabama, Georgia, South Carolina, and Tennessee), Sweetbay Supermarket (104 Florida locations), Whole Foods Market, Inc. (16 Florida locations and 18 [combined] locations in Alabama, Georgia, North Carolina, South Carolina, and Tennessee; and locations in more than 30 additional U.S. states), and Winn-Dixie Stores, Inc (485 [combined] locations in Alabama, Florida, Georgia, Louisiana, and Mississippi). An outline developed by FOG staff described the project's rationale and the objectives for meetings with retailers. The outline was provided to company representatives prior to meetings.

Through these meetings, FOG attempted to learn about:

- Companies' purchasing of "local," "transitional," and "organic" produce and whether demand for these product categories is increasing, decreasing, or flat

- Marketing, promotional, or educational materials that retailers use to promote or inform customers about "local," "organic," "transitional" (or other, e.g., "natural") products

- Involvement by retailers in value-added processing of fresh (raw) produce that they purchase

- Opportunities for Florida farmers, particularly transitional growers, to increase income by selling to large grocery chains

- Opportunities to increase retail shelf space for Florida transitional agriculture products, including labeling/promotion of transitional products

- Challenges observed by retailers that growers who market to the company experience and thoughts about how key marketing challenges could be addressed

FOG recorded corporate officials' responses relating to the above. After the meetings, notes recorded by FOG staff were transcribed, edited and forwarded to respective company representatives with a request that the information be reviewed for accuracy. Retailers were informed that the information would be included in a report that would be made publicly available by FOG. In reporting the results, company names have been withheld.

Results

I. Florida Specialty Crop Farmers

A. Survey

A total of 86 self-completed surveys were collected from Florida specialty crop farmers, representing 35 of Florida's 67 counties in the southern, central, and northern portions of the state. No responses were received from farmers in the western Panhandle. General information about producers' farms was collected as well as more detailed information about growers' production and marketing.

We report the response percentages for survey statements. Our methods do not allow us to describe the whole population of Florida specialty crop producers. In addition, results may be skewed because survey respondents tend to have an interest in the subject. Despite these limitations, the responses of farmers to the survey items provide insight into their views and concerns about growing and marketing specialty crops.

The use of multiple versions of the questionnaire resulted in low response frequencies for some survey statements. As appropriate, where the response rate is low, which occurred for statements not appearing on all survey versions, as well as statements present on all versions that simply had low response rates, we report the total number of respondents along with the response percentages.

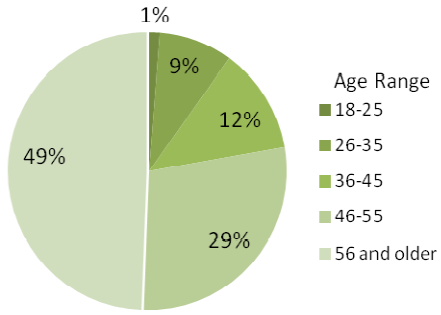


Figure 1. Age Ranges of Farmer Respondents

Figure 1 displays respondents' ages distributed into 5 groups. Regarding the level of education attained by farmers completing the survey, 27% reported having a post-graduate degree, 26% have an undergraduate degree, 14% have an associate's degree, while the remaining 33% have a high school diploma. In terms of yearly household income, 34% report $10,000 to $50,000, 30% said $50,000 to $75,000, 18% said from $75,000 to $100,000, and the remaining 14% of respondents reported total annual income higher than $100,000.

Regarding the producers' farming history and their farm size, more than 49% reported less than 10 years of farming experience, while at the same time more than 45% reported farming less than five acres (**Figures 2 and 3**).

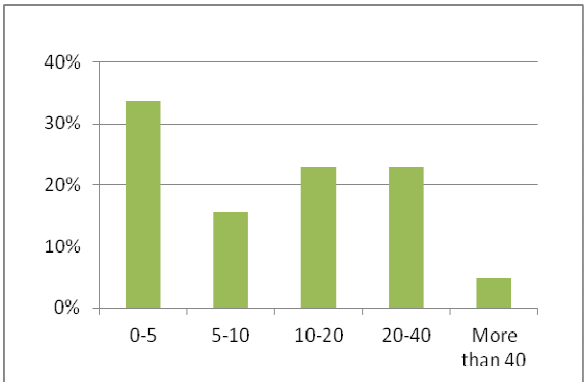


Figure 2. Years of Farming Experience

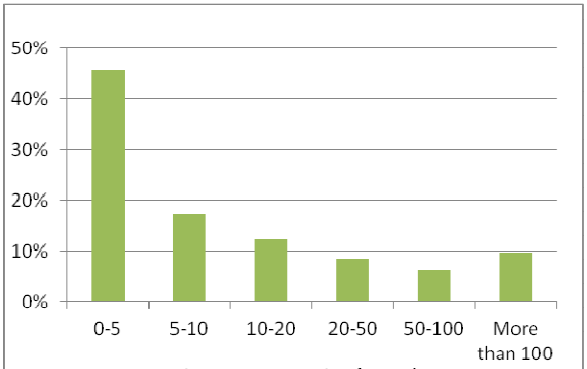


Figure 3. Farm Size (acres)

Among 86 respondents, 21 farmers (24%) reported that part of their farm is certified organic. The remaining 65 respondents (76%) do not have certified organic production. To learn more about Florida specialty crop farmers' operations, the survey asked producers about their common production practices. **Figure 4** summarizes respondents' answers. Others indicated the use of conventional fertilizers, rotational grazing, biological pest control and approved organic pesticides.

Many farmers reported diversified production. Among 80 responses, 55% said they grow at least one vegetable crop among their top 5 income-generating crops. Such vegetable crops include tomatoes, peppers, lettuce, cucumbers, squash, beans, melons, carrots, watermelon, celery, etc. Sixteen percent reported growing berry crops, such as strawberries, blueberries, or blackberries. Around 9% cited citrus crops, and another 9% cited pecans or chestnuts. Those producing flowers totaled 7% of respondents.

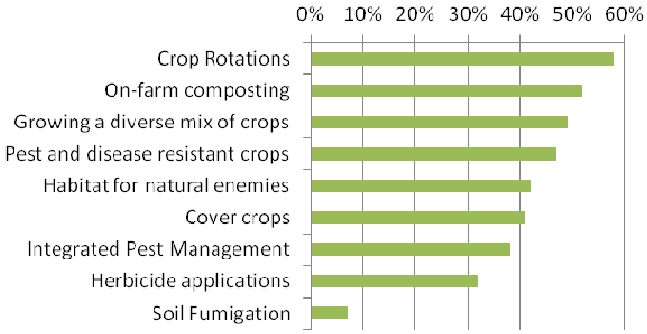


Figure 4. Common Production Practices

Each of the following crops were mentioned by 4% of producers: specialty herbs such as arugula, basil, etc., salad mix, root crops such as potatoes and sweet potatoes, tree fruits such as avocados and figs; also, non-specialty crops: layers/eggs and cattle. Other respondents indicated that they produce micro greens, mushrooms; and non-specialty crops: tobacco, soybean, poultry, dairy goats, and tilapia.

The survey asked growers to identify their biggest production strengths and challenges. Their most frequent answers are summarized in **Figures 5 and 6**.

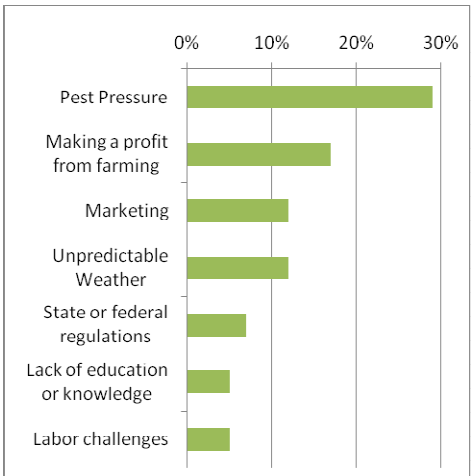


Figure 5. Biggest Production Challenges (43 responses)

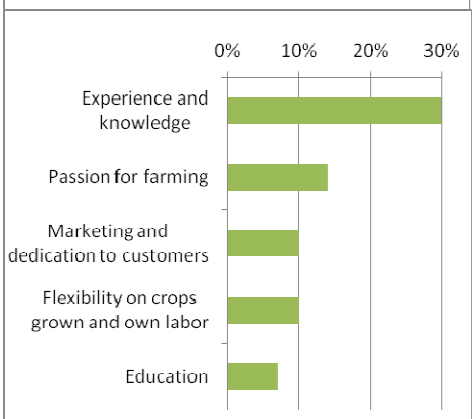


Figure 6. Biggest Production Strengths (59 responses)

Farmers also identified their marketing strengths. The most important views of 54 respondents are displayed in **Figure 7**. Other producers cited their marketing strengths to be (in order of decreasing response frequency): presence at farmers markets, relationships with distributors or buyers, niche markets such as restaurants, fair or low prices, use of the internet, u-pick strategies, by-passing brokers, and good farm location. The use of internet for marketing purposes was also measured by the survey. Out of 74 responses, (36%) of producers indicated that they use the internet to promote their farm and their produce; and, among 72 responses, (31%) stated that they use the internet to sell their products.

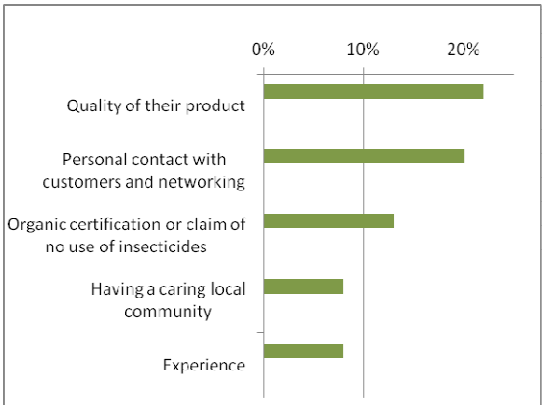


Figure 7. Marketing Strengths (54 responses)

Resources Used

Producers were asked what resources they use for information about crop production and marketing. Among 76 respondents, farmer's views are collected in **Figure 8**. Two-thirds of the respondents specified "other" information sources; one-third listed, in order of decreasing frequency, ATTRA[1], UF/IFAS, UC-

[1] ATTRA – Fomerly known as the National Sustainable Agriculture Information Service (www.attra.org) provides information and other technical assistance to farmers, ranchers, Extension agents, educators, and others involved in sustainable agriculture in the United States., ATTRA historically was funded by a cooperative agreement with the the United States Department of Agriculture's Rural Business-Cooperative Service. However, recent federal budget cuts have forced the service to establish new funding measures. ATTRA has renamed itself the, "NCAT Sustainable Agriculture Project" (https://attra.ncat.org/index.php) Among the new funding measures implemented by the NCAT Sustainable Agriculture Project are fees charged for publications that formerly were available free of charge to farmers and sustainable agriculture stakeholders.

Davis, FOG, ECHO[1], and other agencies. Another third of respondents cited books and agricultural magazines; while others indicated grower groups, buyers and consultants as resources they utilize.

The survey also asked growers to suggest how the resources they use could be improved. From 33 answers, 25% indicated the need for more marketing resources, including marketing "Florida farms" resources, price reporting—especially for organic products, web listings of growers by area, and marketing regulations resources. An additional 24% indicated that more support from Cooperative Extension is needed, especially about organic production, while 21% cited the need for more financial support for their farms through grants and credit, 9% cited the need for creating farmers networks or conferences, while a combined 15% pointed to the need for education and awareness, especially about natural or organic production and the need for more research on organic agriculture. Finally, others stated that they would benefit from post harvest storage resources and better mechanisms to obtain less expensive organic inputs.

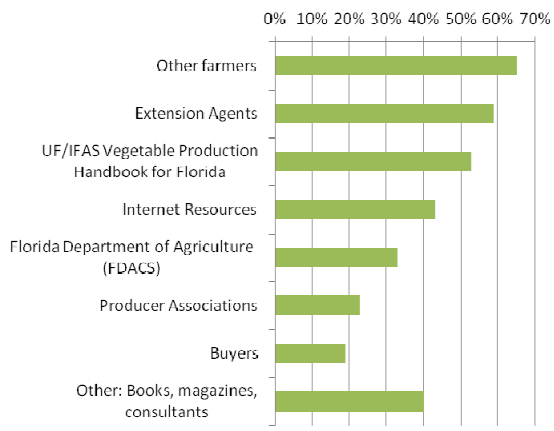


Figure 8. Resources Used by Farmer Respondents

Growers were asked what impact, if any, local, state, or federal regulations had on their farm operation. From 17 answers to this question, 29% of producers stated that value added regulations regarding meat, eggs and poultry (non-specialty crops) were detrimental to their businesses, while 24% felt that regulations are written in favor of big farms and do not fit with the realities of small operations. Specifically, 12% indicated that strict tomato regulations require too much time and energy, while other crops were not subjected to these standards. Another 12% indicated that too much paperwork and regulations regarding organic certification limit farmers who want to transition to organic production. Others cited high and new fees, different interpretation of the regulations by regulators, and land zoning restrictions.

Transitioning to Organic Production

As mentioned above, 21 out of 86 respondents said they currently have certified organic farm operations. Farmers also were asked whether or not they have ever considered transitioning part of their farm to organic production. Six farmers who indicated they currently have certified

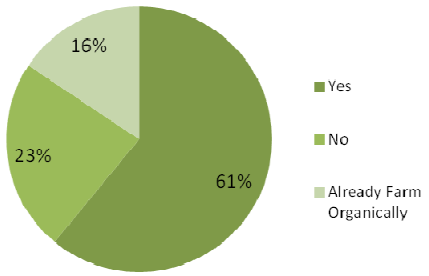
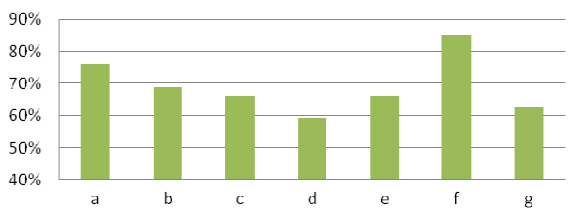


Figure 9. Responses of conventional farmers (only) to the question, "Have you or would you consider transitioning to organic production?"

[1] ECHO (Educational Concerns for Hunger Organization; http://www.echonet.org/) is a non-profit, inter-denominational Christian organization located on a demonstration farm in North Fort Myers, FL.

organic farmland indicated that they have considered transitioning *additional land* to organic certification. When the above question is analyzed only among the 65 farmers (76% of respondents) who indicated that they do not have any portion of their farm certified organic, their answers express interest in organic production (see **Figure 9**). There is an apparent contradiction with the 16% of farmers who answered they already farm organically. Our best explanation is that these producers may consider themselves organic farmers but are not certified organic.

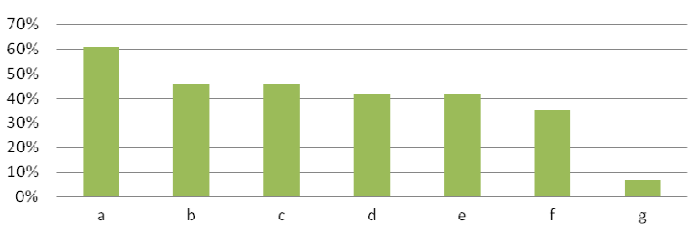


a) Personal concern for the environment. b) Eliminating or reducing synthetic pesticides. c) Building the soil with organic practices. d) Increasing farm income. e) Realizing benefits from biodiversity such as biological pest control. f) Producing safe and nutritious food for the public. g) Protecting health of those who live and work on the farm.

Figure 10. Reasons to transition to organic production

Producers were asked about their reasons for transitioning or not transitioning. With between 48 and 59 responses, their answers are displayed in **Figure 10**.

On the other hand, growers indicated reasons for not transitioning to organic production. The most important responses of 26 respondents are displayed in **Figure 11**. Other concerns raised were the lack of demand for organic products and that income generated from organics would be too little given the work invested.



a) Managing pests, weeds and diseases organically is very difficult. b) Recordkeeping for organic certification is too burdensome. c)Organic certification costs are too high. d)Costs of organic inputs are too high. e)Lack the knowledge to farm organically. f)Low yields in organic farming. g)Lack of markets for transitionial crop during the transition period.

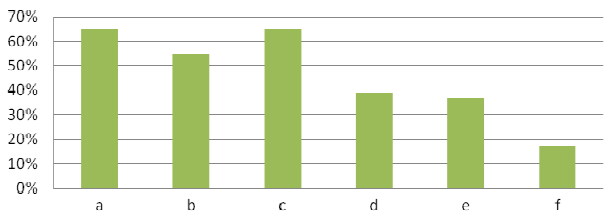
Figure 11. Reasons not to transition to organic production

When farmers were asked in open-ended format if there is any specific factor or circumstances which would cause them to consider transitioning part of their operation to organic production, negative factors were provided that suggest circumstances (decrease in importance or absence of the negative condition) that may influence growers to consider transitioning.

One third of the 22 respondents described that they have problems seeing how organic production can be financially sound, citing high costs of organic inputs and low market prices for organic produce. Florida's unique subtropical climate was cited as an obstacle by 18 % of respondents, since it promotes high levels of pests, weeds and diseases, issues that, perhaps, are most easily managed with conventional inputs. The need for education and technical assistance related to organic practices also was cited as an important factor by 18% of the 22 respondents. Other factors cited were low consumer demand and lack of available markets.

The survey also collected views that producers hold about organic production. The views of 69 respondents are displayed in **Figure 12.** Issues listed in open-ended responses included the lack of

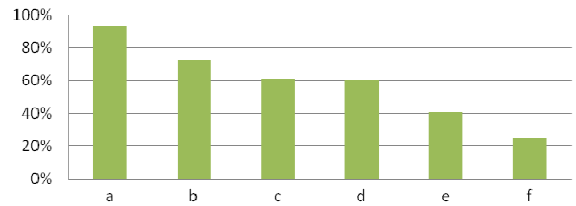
information about organic production, especially for small farms; the lack of knowledge about organic production by extension, and that organic farming is rewarding and is the future of agriculture.



a) Organic farming has higher labor costs than conventional farming. b) Organic farming has higher input costs than conventional farming. c)There is limited research about producing organic crops in Florida. d)Organic farming is more risky than conventional farming. e)It is more challenging to market organic crops than conventional crops. f)Cooperative Extension is knowledegeable about organic production.

Figure 12. Respondents' views about organic agriculture

Producers were asked to identify the typical characteristics of organic consumers. With between 59 and 75 responses, **Figure 13** compiles farmers' most frequent responses. Other views were that organic consumers are value oriented, "trendy," are looking for clean, better tasting, and highly nutritious food, and are people who can afford organic prices.



a) Concerned about their health. b) Concerned about the environment. c) Concerned about the health of future generations. d) Concerned about supporting local agriculture. e) Concerned about their personal status as an organic consumer. f) Concerned for the health of farmers and farmworkers.

Figure 13. Characteristics of organic consumers according to farmer respondents

B. Focus groups

Two farmer focus groups were conducted, one each in the northern and central part of the state. A total of 15 specialty crop farmers participated. Participants at both focus groups were engaged in the discussions. One exception was a participant in the Seffner focus group whose participation was negligible.

Seffner, FL (Hillsborough County) focus group

Nine specialty crop producers participated in a focus group conducted by FOG, April 26, 2010, at the Hillsborough County Extension Office in Seffner, Florida. Farmers reported operations ranging from 35 to 275 acres and most grow strawberries as their main crop. A few of the participants produce cantaloupes and vegetables, and one grows vegetables and green (boiling) peanuts. One farmer grows 15 acres of organic blueberries with additional acreage in conventional strawberries and vegetables. He used to grow organic strawberries but no longer does. This farmer, whose organic and conventional operation classifies him as a "split operation," according to the organic regulations, explained that growing organic blueberries is easier than growing organic strawberries. He said that breeding and selection of strawberry varieties that are best suited for organic production in Florida should be done in soils that have not been treated with fumigant pesticides, to select for varieties that have natural resistance to soil-borne pests and pathogens.

The FOG moderator welcomed participants and described the purpose and protocols of the focus group, stating that one research objective is to learn about factors why conventional farmers may or may not

consider transitioning to organic production. A grower interjected that he didn't want to get started on a negative note but wanted to know whether "…someone is going around asking organic producers why they're not going back to conventional." The participant said that asking conventional farmers why they would or would not consider organic production is, "presumption," and added that the marketing of organic throws dirt in conventional growers' faces. The moderator welcomed the farmer's comments and the meeting continued amicably, with interested participation by farmers.

When asked, "What does organic production mean to you?" one participant said organic means, "Natural. Just let it grow." Another participant said the public thinks organic means that no pesticides are used at all, which he called, "…a misconception, a lie." An additional grower acknowledged the public's concern about pesticides. One farmer stated that organic growers use as many sprays as conventional farmers, just differing in the types of chemicals they use. Another participant questioned, "Isn't the touting of the health and safety of organic a marketing ploy?" One farmer stated that conventional strawberry growers now use the safest fungicides that they have ever used, and another [apparently a farmer who sells product in Canadian markets] said that Canada requires basically no detectable pesticides on strawberries it imports. One participant stated that four of the six sprays he uses to grow conventional strawberries are OMRI[1]-listed as allowed for use in certified organic production. Another farmer said that 20 percent of the chemicals he uses are approved for organic production.

Further discussions

Profitability

Group participants agreed that it is becoming less profitable every year to produce their berries, melons, and vegetable crops. Farmers' costs of production, including diesel fuel, drip-irrigation supplies, plastic mulch, chemicals, and labor all are increasing but the prices that they receive for their crops are not keeping up with increasing production costs.

Production challenges

Increasing production costs and regulations pertaining to food safety, pesticides, farm labor, and water use, especially, large water volumes needed to freeze-protect crops, are the most significant challenges reported by the group. A number of participants agreed that if laws are passed requiring farm operators to provide health insurance for farmworkers, the financial burden would be so great that, as one grower put it, "We'll be done—we could not afford to plant the next crop." Participants stated the need for immigration policies to be resolved so they could learn the laws and plan for compliance and related

[1] The Organic Materials Review Institute (OMRI) is a 501(c)(3) non-profit agency that operates a widely utilized fee-for-service review program that verifies inputs' status for use in organic production; www.omri.org

expenses. Regarding pesticide use regulations, participants expressed frustration that the U.S. Environmental Protection Agency (EPA) had not completed scheduled updates to soil fumigant pesticide regulations. According to focus group participants, their ability to make timely farming decisions was stalled until EPA completed its updates and the county's Cooperative Extension agent could become versed in the new laws to properly inform farmers.

Marketing challenges

According to meeting participants, business practices of large buyers and chain stores can negatively impact the success of their farming. The influence of large buyers on the produce supply chain was said to limit smaller stores from stocking Florida farmers' produce. Participants said that smaller grocers could only stock their produce by purchasing it through intermediaries. Farmers expressed two concerns about intermediary buyers' involvement in the supply chain. First, the quality and appearance of produce usually suffers and, in addition, Florida consumers are charged expensive prices for this deteriorated "local" produce.

Participants noted that Florida (and California) farmers have an advantage in being able to market their wintertime produce in regions of the U.S. whose specialty crop production slows to a standstill during winter. The East Coast markets of New York and Philadelphia were mentioned specifically. However, participants also stated that because large buyers prioritize meeting the Northeast's demands for Florida produce, less of their produce is sold in Florida. A strawberry grower commented that Floridians don't realize that central Florida strawberries are harvested beginning in late fall because, historically, Florida retailers do not stock or promote Florida strawberries until much later in the harvest season. Focus group participants agreed that only within the last couple of years did a prominent Florida grocery chain begin stocking and promoting Florida strawberries earlier—around January. Some participants thought this company's initiative to stock and promote Florida strawberries early in the harvest season may have influenced another major retailer to follow suit. Another grower commented that chain stores have picked up on "locally grown" but it's just a market ploy.

A practice of grocery chains that farmers said is most detrimental to them is the tendency for large retailers to set prices for produce that remain essentially fixed, regardless of changes on the supply side. A grower said that when there is a glut of an item in the market, retailers' static pricing does nothing to help farmers move their produce. Another participant stated that chain stores also do not promote farmers' products when there's an oversupply. One grower expressed hope that retailers would, "help me out when the marketplace is saturated." An additional concern raised about retail produce marketing is year-round availability of seasonal produce. One farmer said that if supply of seasonal items was allowed to "dry-up," Florida consumers would want to pay for the product when it is back in season.

The group suggested that FDACS could assume a greater role educating the public about *Fresh from Florida,*[1] to increase the benefits that growers derive from participation in the program. One participant described an FDACS *Fresh from Florida* promotional campaign but said the promotion did not run in markets that central Florida growers ship to. He explained that Florida strawberry growers can ship to Atlanta in a day, so, "For us, Atlanta is a local market."

Going organic

According to one participant, what will drive wider adoption of organic farming is conventional farmers' "loss of tools," which he explained as increasing restrictions on producers' use of soil fumigant pesticides[2].One farmer stated that organic strawberry growers in California now yield comparably to conventional growers but, as a result of increasing their productivity, the organic farmers have "killed their market." Another participant described the operation of a central Florida organic strawberry grower [not a focus group participant], whose berries do not look appealing and are costing him a lot to produce. Reportedly, the Florida organic strawberry producer's profits are down. The group's only participant with organic production experience, a farmer who grows both organic and conventional specialty crops, said that certain crops may be better suited to organic production in Florida than others. He raised the importance of breeding crop varieties that are suited for organic production and said that "universities don't have the money to do this." One farmer said that high tunnels are needed in order to grow organic strawberries in Florida. Other farmers in the group stated that they had given thought to producing organic crops. One participant said that restrictions on equipment sharing[3] for farms producing both conventional and organic crops factored in his decision not to get into split production, while another said that he could not afford to transition his entire farm to organic production. Another farmer said that low prices paid for transitional produce isn't his only concern, the potential for lower yields is another.

Participants commented on the lack of information available to them about how to produce organic crops in Florida and expressed interest in knowing more about organic production. One strawberry grower indicated that he would like to see two years of research about the pros and cons of organic production before he would consider organics.

---

[1] *Fresh from Florida* Florida Agricultural Promotional Campaign: http://www.florida-agriculture.com/marketing/fapc.htm

[2] U.S. EPA Soil Fumigant Regulatory Background: http://www.epa.gov/oppsrrd1/reregistration/soil_fumigants/soil-fum-reg-backgrnd.html

[3] Section 205.201(a)(5) of the National Organic Program requires "a description of the management practices and physical barriers established to prevent commingling of organic and nonorganic products on a split operation and to prevent contact of organic production and handling operations and products with prohibited substances[.]"

Live Oak, FL (Suwannee County) focus group

Six specialty crop producers participated in a focus group conducted by FOG, June 18, 2010, at the University of Florida's North Florida Research & Education Center in Live Oak, Florida. Producers in the Suwannee County area, near the junction of major interstates I-10 and I-75, and approximately 50 miles west of I-95, have the potential to access large markets in Florida and Georgia. However, the region's rural isolation and sparse population are significant disadvantages in terms of local marketing opportunities and labor availability.

Focus group participants reported growing vegetables and herbs, blueberries, blackberries, strawberries, and stone fruits on small acreages, ranging from ¼ acre to 4 acres. Two growers had 160 and 310 acres, respectively, with the latter producing hay and tobacco on owned and leased land, in addition to 3 acres of strawberries. Two producers grow greenhouse herbs, and one also grows about an acre and a half of sweet peppers underneath shade houses, which he sells wholesale. Participants also reported direct-marketing their specialty crops through farmers markets and an on-farm produce stand.

Further discussions

Profitability

Most participants reported working off-farm jobs and stated that their income from farming would be insufficient to make ends meet. Also, growers said that they cannot sell enough vegetables and herbs locally to make a profit, and larger markets are 50-100 miles away.

Production challenges

Participants discussed labor as the most important challenge they face. North Florida farmers are challenged to hire and retain workers due to the region's low population density, relatively few, widely dispersed farms, and difficulty competing for labor with other parts of the state where farms employing large numbers of workers are concentrated. A blueberry grower said that the low wages that he can afford to pay makes it difficult for him to attract workers. He explained that earlier harvests by large blueberry farms in central-south Florida saturate the market, translating into lower returns on his crop and, hence, lower wages that he can afford to pay workers, by the time his berries in north-central Florida are ready for harvest.

Growers voiced the need for a willing, legal workforce. One farmer said that something has to be done about immigration policies because the lack of legal labor is a, "crisis for the farmer."

The farmer who grows peppers under shade was certified organic in 2009, and was the only participant with organic production experience. He said that he received a good price for his organic peppers and reiterated numerous times his desire to grow his crop organically but explained that pest pressure from stink bug that he experienced in 2009 and the ineffectiveness of an NOP-allowed pesticide he purchased at great expense to control the stink bugs, led him to drop organic certification in 2010. Despite no longer being certified organic, he explained his hopes to avoid spraying insecticide on his current crop. But, he said that he had finally determined to spray insecticide, in order to keep his peppers from becoming unmarketable. The farmer brought a few peppers to the meeting to demonstrate the damage to fruit from stink bugs. Each fruit had 1-2 small areas of visible but minor discoloration from the insects' feeding. The grower explained that he would not be able to sell such peppers to his wholesale buyers in Florida, Georgia, and Colorado.

The group was very vocal in its support for agricultural research and extension professionals as educators of farmers and emphasized the negative impacts that budget cuts to land grant universities have on farmers.

Marketing challenges

The lack of markets in the immediate north-central Florida area is a significant challenge for small scale specialty crop farmers who do not access markets in larger cities, such as Jacksonville. The farmer who sells peppers wholesale stated that he has no protection from the practices of brokers that negatively impact his success. It was also stated that, "big-time organic operations are trying to push out small farmers."

Going organic

The only participant with experience producing certified organic crops, which he did in 2009 before relinquishing his certification in 2010, described his challenges as: lack of area suppliers of NOP-compliant inputs, extremely high cost of organic-compliant pesticides, and the ineffectiveness of these pesticides, particularly to control stink bug. To produce approximately 1.5 acres of peppers, the grower reported spending $10,000 on organic-compliant pesticides in 2009. In contrast, he anticipated spending $500 on conventional pesticides in 2010. The farmer also stated that, "big-time organic operations are trying to push out small farmers."

One of the farmers, who has 3 acres in strawberry production, stated that he has never considered growing his strawberries organically. He indicated that he uses potent conventional insecticides but even these do not always control strawberry pests. For this farmer, investing tens of thousands of dollars in a strawberry crop that he could not, if he deemed necessary, treat with conventional insecticides was not something he

would consider. The grower, who sells his strawberries through an on-farm produce stand, stated that only one or two of the farm's customers have asked whether his strawberries are organic.

Another grower described himself as a "hybrid" organic farmer and a third participant likewise indicated an inclination to practice organic methods, mentioning the use of beneficial insects in her greenhouse herb operation and her mentality of trying to avoid spraying pesticides. This farmer stated that "the organics that I do is because of principle, not the market." She said that she doesn't feel she can make it in the market. Another participant questioned why he would want to grow organically after stating that he has half the labor, half the expense, more yields, and that produce which he submits to a laboratory shows no pesticide residue. One farmer simply said the "profit [from organics] is not there."

Farmers who were inclined to adopt organic production stated that they require more research-based information and technical support.

Themes common to Seffner and Live Oak focus groups

1) Market domination

"You have no protection from your brokers…I'm a libertarian…but government has got to get involved..."

–Live Oak Participant (2010), responding to the moderator's question, "What is the role of government?"

"Corporations—big American companies—are growing [specialty crops] in poor countries and shipping it back here to undercut Florida farmers."

–Seffner Participant (2010)

When considering government's role in agriculture, focus groups voiced concerns about the impact that dominant actors in the global trade system have on the success of their farms. Participants cited competition from imported produce and powerful influences in the domestic market that negatively impact Florida farmers. Regarding the U.S. supply chain, growers described the excessive influence that large brokers, retailers and "farming corporations"[1]can impose on the produce market, to the detriment of farmers. Farmers at the Seffner meeting, most of whom grow strawberries as their main crop, described negative impacts from produce imports. Imported strawberries from Mexico were cited as a chief factor depressing prices Florida strawberry growers obtained in a recent harvest season. One strawberry grower

[1] Defined by the commenting grower as large companies that contract with farmers.

stated that, “We need some regulation to protect the Florida Ag Industry.” The group expressed that U.S. Agriculture needs to be protected, not just Florida Agriculture.

2. Labor challenges

“The whole immigration thing…is a farce—should have done something 15-20 years ago.”

–Seffner Participant (2010), responding to the question, “What is the single greatest challenge you currently experience producing your specialty crops?”

“…a crisis for the farmer.”

–Live Oak Participant (2010)

When asked what their greatest challenges are producing specialty crops, participants cited difficulties securing legal, qualified workers. Participants linked their labor challenges to U.S. immigration policies and other factors.

3) Concerns about pesticides

“[I] send [my produce] to a lab and there’s no pesticide residue.”

–Live Oak Participant (2010)

“[It is] pesticides people [are] concerned about.”

–Seffner Participant (2010), after the question was raised, “Why are we having this discussion?”

Focus groups raised concerns about pesticides while considering the meaning and public perception of “organic,” and their own thoughts about transitioning to organic production. A Seffner participant, a strawberry grower who apparently sells to Canadian markets, stated that “we’re safer than we have ever been.” He explained that Canada requires, basically, “zero residues” on strawberries that it imports. Two Live Oak participants described their desires and efforts to limit their use of pesticides. Another north Florida participant voiced an unwillingness to assume the economic risk he associated with forgoing the use of conventional pesticides to protect his strawberry crop. A Seffner participant said that ultimately it will be the increasing restrictions on conventional farmers’ use of soil fumigant pesticides that will lead

more farmers to go organic. The Seffner group also cited government regulation of pesticides among the greatest challenges they experience. Focus group participants agreed that most consumers who buy organic products do so in order to avoid pesticide residues.

4) Insufficient organic resources and support

"Show me I can make a profit doing it organically… two years of research—pros and cons."

–Seffner Participant (2010)

"If the knowledge is out there on how to produce organically—how to use chemicals correctly, effectively—we're not getting it."

–Live Oak Participant (2010)

"Education. Someone needs to teach me."

–Live Oak Participant (2010); a self-described "hybrid" organic farmer, responding to the question, "Why haven't you gone organic?"

Participants indicated their interest in organic production. Farmers cited the need for resources and education as an important factor in their decisions about adopting organic production. A north Florida farmer said, "If they keep on cutting [funding] for land-grants…researchers spend 75% of their time writing grants they have slim chances of winning…these are the people we depend on getting information from…It's not happening for Conventional Ag; how in the world can we expect it for Organic?"At the Seffner meeting, a grower described how information about conventional production is readily available: he receives all his "conventional magazines" in the mail, while he does not receive "organic magazines."

II. Florida Consumers

A. Survey

A total of 329 Florida residents responded to self-completed consumer surveys developed by FOG. We analyzed the descriptive information provided by these 329 respondents. In addition, because of the nature of the different survey venues, we separated the surveys into two groups to allow comparisions. Group 1 consists of responses collected at farmers markets and natural food cooperative grocers (i.e.,

venues 3-6 described in Methods). A total of 180 surveys make up Group 1, with 125 submitted at natural food cooperative grocers and 55 submitted at farmers markets. Group 2, totaling 149 surveys, consists of 124 responses obtained via the online instrument and 25 collected by intercept surveying at the Azalea Festival, the City of Palatka's annual springtime event (i.e., venues 1-2 described above). FOG's consistent monitoring of online survey submissions indicated approximately 100 surveys were submitted via the FDACS website, predominately via the FDACS homepage, and approximately 25 surveys were submitted via other web links (i.e., FOG website and E-news, FDACS 'organic' web page, Cooperative Extension email announcements).

We analyzed and compared data groups to determine if differences exist between Group 1 venues and Group 2 venues, assuming Group 2 to more closely represent a general audience. Differences between Group 1 and Group 2 are reported below. Where notable differences between Group 1 and Group 2 were not found, results are presented for all available data. For all results reported, the number of responses to respective survey items exceeds 75 percent of the total sample size for the given data set (i.e., Group 1, Group 2, or all data).

Response percentages for survey items are reported below. Our methods do not allow us to describe the whole population of Florida consumers. Also, results may reflect a lack of participation by consumers who are uninterested or disinterested in the topics being investigated.

Views about organic

According to the survey, more than 50% of consumers buy organic fruits and vegetables "always" or "almost always." Differences between Groups 1 and 2 were observed (see **Figure 14**).

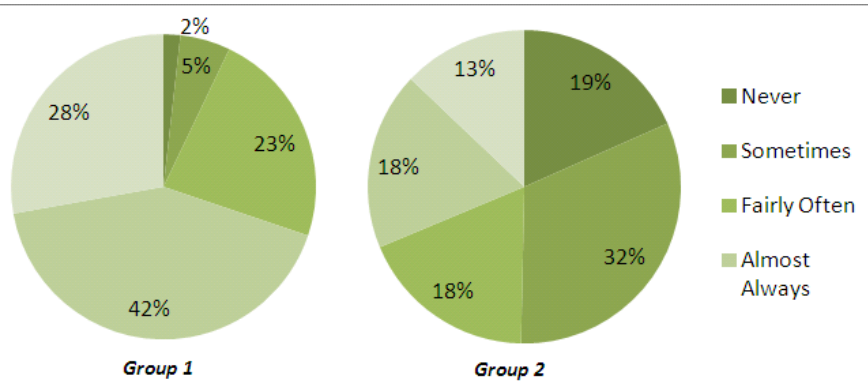


Figure 14. Consumer responses to the question "How often do you buy organic fruits and vegetables?"

Availability of local organic fruits and vegetables is seen as important by 78% of consumers: 63% responded "very important" and 15% "important." At 9% were those who say they are neutral about the availability of organic produce, while 13% said that the availability of organic produce is "not important." Differences between Groups 1 and 2 were apparent. Group 1 has 76% responding "very important" and 18% "important," a total of 94%. This differs from the answers from Group 2, for which

48% stated it was very important and 12% said important, a total of 60%. Among Group 2, 16% were neutral about the availability of locally grown organic produce and 24% considered it "not important."

Consumers' concerns about pesticide residues were also found, with 43% responding that locally produced fruits and vegetables may have pesticide residues, unless they're organic. Differences between Groups 1 and 2 are worth mentioning. For Group 1, this percentage is 52%, while for Group 2 it is 31%. Similarly, pesticides in the environment was highlighted by many. When asked, the majority of consumers indicated that the environment is negatively impacted by the use of conventional inputs. Differences also exist between Groups 1 and 2 for this question. See **Figure 15** for more details.

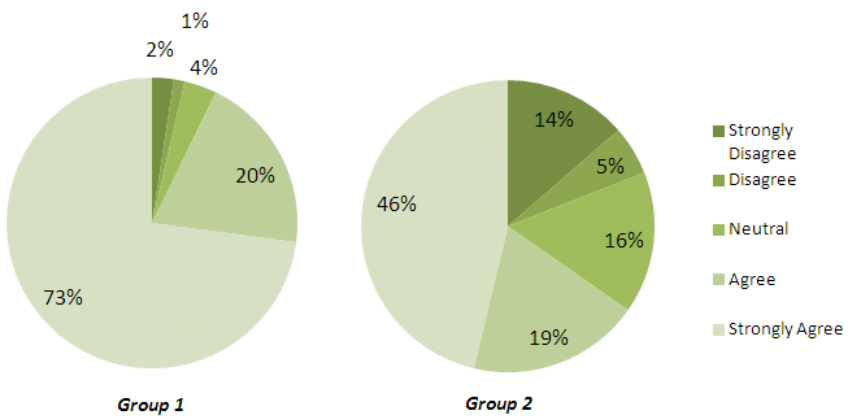


Figure 15. Responses to the statement, "Florida's environment is negatively impacted by synthetic pesticides and fertilizers used to grow crops conventionally."

In terms of the costs of organic products for consumers, many (37%) viewed the higher prices of organic products as too expensive or unjustified, while others acknowledged that there are costs associated with conventional agriculture that are not reflected in prices charged at the grocery store. Regarding consumers' thoughts on the prices of organic produce, a combined 52% of respondents, "strongly agree" (33%) or "agree" (19%) that, "[c]onsumers should not have to pay more for fruits and vegetables produced using organic farming practices." Among the remaining respondents, 26% said they are "neutral," while 15% "disagree" and 7% "strongly disagree."

Regarding the costs of conventional produce, the majority of consumers agreed that conventional produce would be more expensive if the actual costs were considered. Again, there are differences between Groups 1 and 2 (see **Figure 16**).

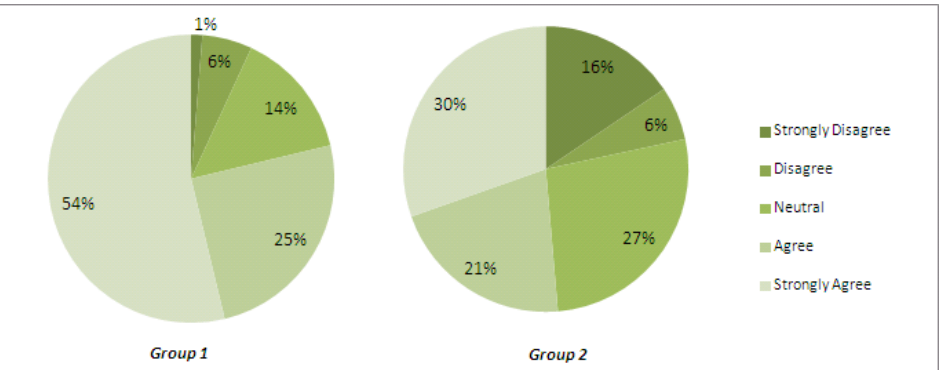


Figure 16. Responses to the statement, "If the actual costs of conventional agriculture are considered, conventional produce would be more expensive."

Finally, the majority of respondents hold the view that government should provide incentives for farmers. See **Figure 17** for notable differences between Group 1 and Group 2.

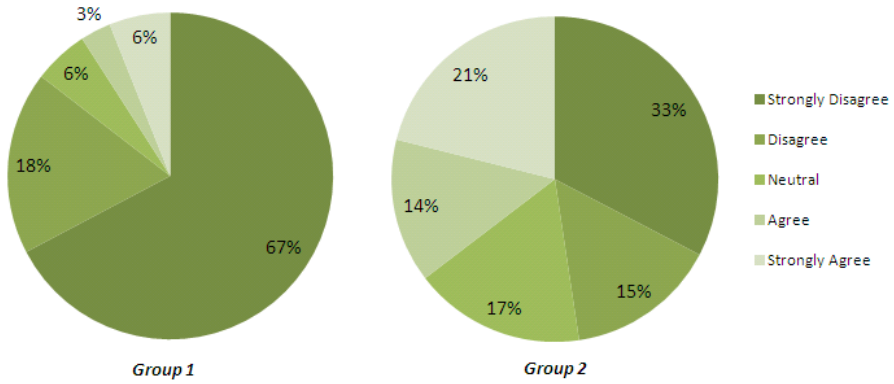


Figure 17. Responses to the statement, "Government should not provide incentives for farmers to use organic farming practices."

Only 10% of respondents indicated that locally grown fruits and vegetables are of poor quality where they shop. When asked about the importance they place on availability of "high quality fresh fruits and vegetables," a combined 93% of consumers indicated that the availability of these products was "very important" (68%) and "important" (25%); while 5% responded "neutral," and 2% said "not important." Also, a combined 73% of consumers indicated that the availability of fruits and vegetables labeled "Fresh from Florida" was "very important" (41%) or "important" (32%); while 22% said "neutral" and 5% said it was "not important." This is supported by 95% of respondents' disagreement with the statement: "Purchasing locally produced fruits and vegetables is not important for me."

In terms of valuing the freshness of locally grown produce, 75% of consumer respondents hold the view that Florida-grown fruits and vegetables are fresher than out-of-state or overseas produce: 41% "strongly disagree" and 34% "disagree" with the statement, "Fruits and Vegetables from Florida are not fresher than those from California and overseas farms."

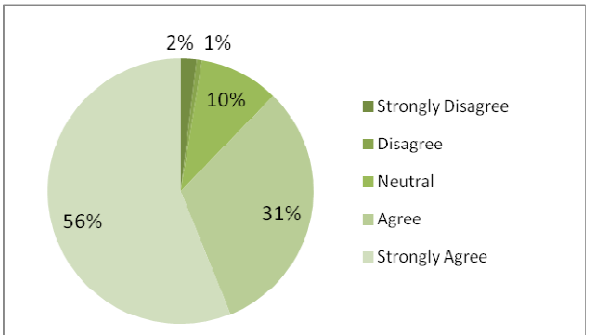


Figure 18. Responses to the statement, "Floridians should try to buy fruits and vegetables that are Florida-grown."

Local produce shopping habits also were asked about in the survey. A combined 39% of consumers indicated that they buy Florida-grown fruits and vegetables "always" (8%) or "almost always" (31%); with 44% responding "fairly often," 16% "sometimes" and 1% "never." Other data associated with the local produce shopping experience are: 53% of consumers indicated that fruits and vegetables are not labeled as locally produced; 37% said that the fruits and vegetables they want are not grown locally; 37% of consumers agreed that the locally produced fruits and vegetables they want are unavailable where they shop; and 23% of consumers who indicated that the locally grown fruits and vegetables they desire are easy to find.

Figure 18 shows that consumers are eager to support Florida grown fruits and vegetables. Additionally, a combined 90% of respondents "strongly agree" (62%) or "agree" (28%) that Florida grocery stores should carry a wider variety of Florida-grown fruits and vegetables.

Finally, **Figure 19** shows that both Group 1 and Group 2 strongly support a label that identifies Florida produced grown without synthetic pesticides.

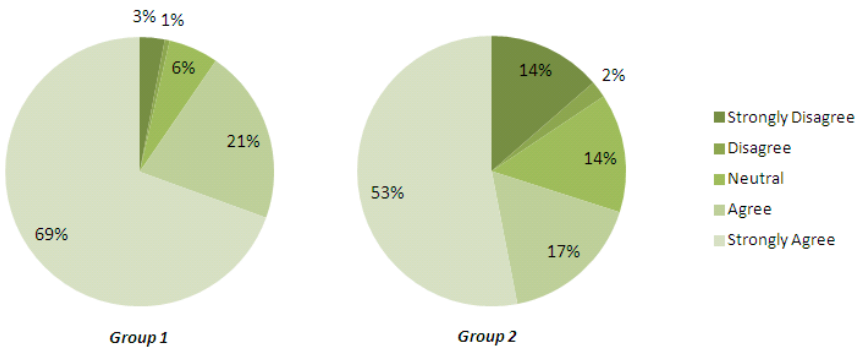


Figure 19. Responses to the statement, "Floridians should support a label that identifies Florida produce grown without synthetic pesticides."

Markets

Consumers were asked to identify the places at which they buy fruits and vegetables. Their views are collected in **Figure 20**.

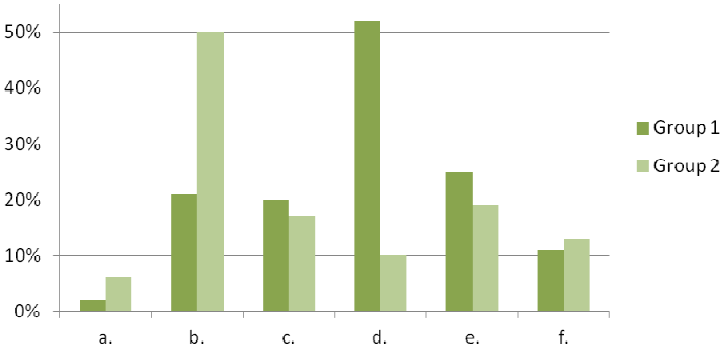


Figure 20. Locations where consumers respondents buy food.
Comparing Groups 1 and 2 using combined "always" and "almost always" responses .

B. Focus groups

Three consumer focus groups were conducted by FOG staff involving 31 Florida residents that purchase fruits and vegetables.

Seffner, FL (Hillsborough County) focus group

Ten Florida residents participated in a consumer focus group conducted by FOG, April 26, 2010, at the Hillsborough County Extension Office in Seffner, Florida. Participants were selected after responding to an email from IFAS Extension that announced the opportunity to participate. Participants reported living in 1- or 2-person households and each confirmed being the primary produce shopper of the household.

A majority of participants said they shop for fruits and vegetables at one particular Florida grocery chain because of the quality of its produce. However, participants stated that this retailer does not carry much produce grown by small farmers and expressed that they want to see more of small farmers' produce in grocery stores. A participant who shops for produce at another grocery chain, said that both chains are alike in that both sell "conventional peaches from Chile." Another reported buying produce from roadside vendors. In response, someone stated that produce vendors purchase the fruits and vegetables they sell from the same global distribution system that supermarkets source from, not from local farmers. A participant mentioned that "growers markets[1]" have been started but haven't been successful. Another said that farmers markets are a challenge to shop at because they're generally open only once a week. A comment was made that, at farmers markets, "You don't know [the produce] is organic, unless you know the farmer." A participant who was previously involved with a CSA described it as a way to "invest in a local farm."

On the topic of educating the public about agriculture and food, the necessity of educating children from a young age was emphasized by the group. One participant commented, "Kids should be educated on food preparation," while another stated, "Look what they've done in the schools. How many schools have Home Economics?" Group members voiced concerns about school meals and the low quality of foods provided by schools. Farm to school[2] was discussed as a way to improve the quality of foods served in school cafeterias that could also benefit Florida farmers.

---

[1] "Growers Market" has been adopted by some markets to emphasize that their vendors grow the produce they sell, and are not, as is sometimes the case, purchasing wholesale produce and re-selling it at the market.

[2] The National Farm to School Network website (http://www.farmtoschool.org/index.php) states: "Farm to School is broadly defined as a program that connects schools (K-12) and local farms with the objectives of serving healthy meals in school cafeterias, improving student nutrition, providing agriculture, health and nutrition education opportunities, and supporting local and regional farmers."

The moderator raised the topic of product labeling and the group expressed its view that if accurate, informative labeling was in place, consumers would consider this additional information. Prior to the moderator raising the topic of labeling, a participant expressed concern over use of the word "natural" in the marketing foods. This prompted a discussion about whether the claim "natural" is legally defined or regulated. Most participants said they thought there are no standards for and no regulation of foods labeled "natural".

Further discussions

Considerations when buying fruits and vegetables

Participants stated that knowing, "where it's from" is an important consideration. Country of origin was raised and participants expressed preference for domestically grown produce. The group expressed doubts about whether produce grown in other countries is produced, "to standards," and one person commented that only a very small percentage of produce imported by the U.S. is "inspected" prior to reaching the marketplace.

A majority of participants reported that they try to shop for organic produce. One participant stated that some fruits and vegetables receive more pesticide sprays than other types and said that his household prioritizes purchasing organic for items that when grown conventionally carry residual pesticides. Another participant stated that, "Genetically modified stuff scares me," and expressed concern about unknown risks of consuming genetically engineered (GMO) foods.

Participants raised the importance of size and taste as considerations they have when purchasing fruits and vegetables. A lively discussion ensued on the topic of taste. One person described good taste as, "like when I was a child," while another exclaimed that, "a ripe peach or tomato should smell!" A participant who moved to Florida from Virginia said that taste depends on the soil in which the crop grew. He said that Virginia's fresh produce tastes better than Florida's, and he attributed this to differences in soils. Participants discussed that in commercial tomato production, fruit are harvested before maturity and treated to induce ripening, leading to tomatoes that have "no taste."

Government role

For this topic, the group was informed that "government" could apply to any or all levels: local, state, and federal. A participant stated that government's role is to ensure that foods are safe. Another commented that government's role includes accurate labeling of foods. The North American Free Trade Agreement (NAFTA) was raised, in relation to crop-devastating cold temperatures experienced during the 2009-2010 winter. The commenter explained that cold temperatures delayed maturation of Florida strawberries and

by the time Florida's crop was mature, the market was flooded by imported strawberries. NAFTA was said to be, "Putting the screws to the American farmer." Consumer participants voiced collective agreement that government does not protect small farmers. It was said that government supports big corporations and that a few corporations control the food we eat.

Thoughts about organic and transitional

When asked, "What does 'organic' mean to you?" participants said:

- "Grown without chemicals; or, as much as possible…know what the farmer used."
- "Organic is the way my parents were growing."
- "No pesticides. No man-made stuff."
- "No pesticides. No chemical fertilizers."
- "Soil has to be maintained in a certain manner."

Regarding transitional agriculture, one participant reportedly would buy transitional produce over conventional produce, while another would pay "a little more" for transitional produce. A third individual communicated a desire that transitional products be labeled as such, and a fourth commented that farmers could advertise themselves as transitional. The group voiced support for greater availability of transitional products. Someone stated that, by supporting transitional farms, "Those become organic farms."

According to one participant, "consumer education is important in order for people to know what organic and conventional mean." Participants considered that other words or phrases could be used instead of "transitional." Examples provided were: "becoming organic," "pre-organic," and, "going green." One participant suggested that government could subsidize farmers' transition to organic production, prompting another to respond that once government subsidies enter the equation the, "strings are never cut."

Jacksonville, FL (Duval County) focus group

Eleven individuals participated in a focus group conducted by FOG June 25, 2010 at Jacksonville City Hall. Most participants reported living in 3-person households; one individual reported a twelve-member household. All but one of the participants identified themselves as the primary food shopper of the household. Seven participants stated that they shop for fruits and vegetables at Publix and three purchase produce at Wal-Mart. Other retail grocers that participants shop for produce at include: Winn Dixie, Whole Foods, Save-a-Lot, and Fresh Market. Participants cited the convenience of grocery stores and, in

particular, that they can find most of what they need at one location. Five participants purchase produce from farmers at Jacksonville's Saturday Riverside Arts Market.

Factors which participants cited as important in deciding where to shop for produce include: availability of local produce, price, freshness, and product convenience ("baby" carrots and bagged salad mix were given as examples of convenient items). One individual said that availability of seasonal produce is important, prompting the participant who stated that local was important to clarify that, to her, "local" means "seasonal."

Participants considered the relationship of seasonality and price, and agreed that out-of-season produce is generally more expensive. When asked by the moderator if they knew what was in season, one participant responded, "cherries." The moderator qualified his question, "Can we grow cherries in Florida?" Participants at the June focus group then replied that the Florida strawberry harvest may now be coming to its end, or, perhaps, had recently ended; and, that Florida blueberries, tomatoes, and melons are in season. One participant who grows a vegetable garden added that she has cucumber, zucchini, and herbs maturing. Revisiting strawberries, participants agreed that notwithstanding the seasonality of Florida's strawberry crop, strawberries are available in Florida grocery stores year-round. Melons also were cited as having a defined growing season in Florida but which are available at stores all year. One participant commented that "eating seasonally [is] healthier."

One participant commented that she is trying to convince her household to become a "no-banana family" due to her concern that bananas are always shipped from afar. Responding to this sentiment, a couple of participants stated that they are concerned about "sustainability." A couple of other participants then stated that they aren't concerned about sustainability. The moderator asked the group: "What does 'sustainable' mean? Is it just food miles?" Responses from 3 participants were: "Everything from soil to plate;" "Resource concerns—water running out;" and "We need sustainability from farm to consumer [and a] timeline that preserves nutrient quality of foods."

Further discussions

Considerations when buying fruits and vegetables

Participants were asked to exclude price from their list of concerns. Three persons stated that the origin of produce is important to them, and one indicated that this information is not always made available in the retail marketplace. Six individuals cited "freshness," with one of these participants having cited "origin" as well. One person described his household's preference for shopping at a produce stand known to sell produce grown only a few miles away. Two participants stated they are concerned about pesticides and another, who voiced a concern about "insecticides" specifically, added that she "likes organics." One

participant said that she "doesn't care what's on it" because she washes produce before it's eaten. Another comment expressed the concern that produce imported by the U.S. may have been grown in countries that lack appropriate standards on pesticide use. Four participants stated that produce "color" is important to them. Another participant said that she wants to be sure that "'color' isn't from added chemicals;" she wants to be sure that the produce has not been, "chemically enhanced." One individual said she goes through the entire produce bin looking for cosmetically appealing produce, whereas another explained that she tries to educate her son that it's okay if fruit has blemishes; that it doesn't have to be "perfect."

Government role

One participant stated that, "The Department of Ag should step up and inform the public about farming practices." Another participant responded, "Why does there always have to be a government body? Why can't it be a committee of farmers?" The participant who expressed that the "Department of Ag" and state and local governments have a role educating the public about farming practices voiced agreement with the ensuing comment that farmers, as well, could educate the public, and said that farmer cooperatives in Tennessee that she is familiar with educate the public about their farming. A third individual weighed in, "I think Americans have become too reliant on government regulation," and explained that if there was less regulation, then people would take more responsibility for the food supply. Another commented that "This society breeds stressed out people and stressed out people are compliant, unquestioning."

Thoughts about organic and transitional

Participants responded that organic products are available at the stores they shop at, and most stated that they sometimes purchase organic items. When asked what "organic" means to them, participants responded:

- "Costs more."
- "No chemicals."
- "Pesticide-free."
- "[It's] got the nutrients in it."
- "Organic is always changing."
- "[I've] heard that 50% of what's organic really isn't."
- "[I] don't know what it means. I assume it's better but the regulation is wonky."

One participant said that there might be differences in organic produce grown in different places, while a second thought there may be different regulations established in different places[1]. Another participant said

[1] As of 2002, agricultural products "intended to be sold, labeled, or represented as '100 percent organic,' 'organic,' or 'made with organic…' must be certified to USDA National Organic Program (NOP) Regulations, with the exception of operations

that she gives national chains the benefit of the doubt that what's in the organic bin has been verified to meet organic standards. Participants indicated that they trust the USDA organic seal. One person said that she would like to have contact with the farmer.

Group members were asked if they had heard the term "transitional" and one participant responded that "transitional" is used to describe farms that are in the process of becoming verifiably organic. Others had not heard "transitional" used in relation to agriculture or produce. No one had seen "transitional" labels in the marketplace. When participants were asked what they thought about a retail price point for transitional produce that would be in-between the prices charged for organic and conventional products, one person responded that three price tiers would be "too much going on." Another participant questioned, "Why would you buy transitional when you could buy organic?"

Orlando, FL (Orange County) focus group

Ten central Florida residents participated in a focus group conducted by FOG, July 10, 2010, at Orlando City Hall. Nine participants reported being the primary food shopper in the household. Participants occupy households with one to four members. The individual who stated that he is not the primary food shopper said he provides input in his household's food purchasing. Participants identified Clemons Produce (a small independent retailer), Cosco, Publix, Wal-Mart, and Whole Foods as stores they purchase fruits and vegetables at. The group also discussed farmers markets.

One individual who recently had moved to Orlando from Baltimore said she prefers farmers markets. The participant explained how shopping at farmers markets, not "big stores," was characteristic of living in Baltimore. She reported having difficulty locating farmers markets since moving to Orlando. Another participant prefers farmers markets but said that it is not always possible to shop at them. One individual said that it is smart to "try to connect with a farmer." Another participant goes to farmers markets for "special ingredients" for home-cooked meals. One participant stated that he has never shopped at a farmers market because he has, "never happened upon one."

Participants were asked how they choose a farmers market. Responses included location, convenience, and the days of the week that the market is open. One participant said that she never carries cash so it's more convenient to go to a grocery store. A participant who was raised in the Orlando area stated that she frequents the Winter Park Farmers Market, "…almost as a family tradition." Another participant said that some people may stay away from the Winter Park Farmers Market because they may perceive it as a, "hoity-toity" social event for affluent people.

---

defined as "exempt" or "excluded." NOP regulations apply to all agricultural products sold within the U.S., including products grown and/or processed in other countries.

When asked, the group named collards, corn, strawberries, avocado, oranges, tomatoes, and watermelons as crops that are produced in Florida. Participants stated that watermelons, in-season in July, would nonetheless be stocked by grocery chains during winter and, at that time of year, would be grown somewhere other than Florida and may be more expensive.

In response to the moderator's question about whether participants are concerned about food safety, one person stated that government could provide more information about the exact pesticides that are being used, stating that, "People have no idea."

The group discussed Florida consumers' awareness about Florida agriculture, local and organic foods. One person said consumers "need to be better informed" about Florida farmers. Another said, "I want to know." Someone added that people in metropolitan Orlando are not as well informed about Florida Agriculture as are people in Plant City. One individual commented that it's just a matter of marketing Florida-grown crops; that if Florida Agriculture is promoted, consumers will support it. Another participant disagreed that informing consumers about Florida farmers would increase purchasing of Florida-grown produce; he said that a lot of people just want to buy what's affordable, and in this context mentioned the high cost of organic foods.

Further discussions

Considerations when buying fruits and vegetables

A majority of group participants stated that they give consideration to how the produce they purchase is grown. One participant referred to a grocery chain's brochure that explained different food labels such as "organic" and "natural." The participant appreciated the information provided in the brochure. However, she stated that she doesn't want all the verbiage—she's concerned about pesticides, wants to know where the food is from and that it hasn't received "treatments." The participant cited the Orlando-area chain store location that she obtained the brochure from but did not know if the information was available at any of the company's other store locations. Another participant stated that other countries allow pesticides which are not allowed in U.S. agriculture. In response, a third individual commented that, "you would think…our government would investigate before we start bringing in what [other countries] are offering." Another participant stated that he, "wants to support U.S. farmers," because he knows farmers are struggling.

Government role

One person voiced that the State agricultural department should fund commercials that urge consumers to support Florida farms and local agriculture. Another participant agreed and added that a lot of businesses

"can't afford marketing." Two participants added that northern U.S. agricultural departments actively promote their states' agriculture. The participant who recently moved to Orlando from Baltimore said that, in Baltimore, local produce is promoted directly to low-income and single parents through Maryland's administration of the Women, Infants, and Children (WIC)[1] Program.

A participant who would not pay more for transitional fruits and vegetables, calling the decision to transition to organic, "A farmer's business decision," said, "There should be some tax incentive, tax break [for transitioning farmers]. Government should support them. It's essentially the gamble of starting a new company."

It was said that large retailers can cause the demise of independent grocers and one such Orlando-area small grocer that had recently gone out of business was cited. In this context, the group expressed that government "does more to support big business," with someone adding that, "all the lobbyists [are] in Tallahassee."

Thoughts about organic and transitional

Participants stated that organic products are available where they shop and most reported that they sometimes purchase organic products. Reasons given for buying organic foods were: "Better lifestyle;" "Better choice;" "Natural;" "[They're] basic, simple;" and that, organic foods don't have "strange ingredients." One participant said they don't buy organic often because it's more expensive and Whole Foods is far away. One person buys organic because, "I know it's not genetically modified [GMO]. It's natural, doesn't have all kinds of things sprayed on it that can hurt me, friends, family. It's been grown, not on a perfect farm, but in a real setting."

The moderator asked the group, "Why does organic produce cost more? Is it worth it?" Two responses were: "People need to work harder to grow [organic produce]" and; the crop had to be (manually or mechanically) weeded, the farmer did not, "go out with their airplane and spray it." Another participant wouldn't mind paying more for produce that was known to be organic, conveying skepticism about whether organic produce sold by a nation-wide retailer was actually organic. Two participants described the USDA organic seal; others indicated familiarity with the USDA seal after listening to its description. One person stated that, "The USDA seal makes me feel a little safer. At least the government has looked into it."

[1] The Special Supplemental Nutrition Program for Women, Infants, and Children (WIC Program) provides Federal grants to States for supplemental foods, health care referrals, and nutrition education for low-income women, infants, and children up to age 5 who are at nutritional risk. The Food and Nutrition Service (FNS), an agency of the U.S. Department of Agriculture is responsible for administering the WIC Program at the national and regional levels. http://www.fns.usda.gov/wic/

Participants were asked if they think that organic means that no pesticides are used. The group's response was that some pesticides are allowed in organic farming but not the, "real hazardous" ones.

Themes common to Seffner, Jacksonville, and Orlando focus groups

1) Concerns about pesticides

"I'm thinking about chemicals, my five-year old."

–Orlando Participant (2010), elaborating on her expressed concern about "produce safety." Additional comments by this individual equated "chemicals" to pesticides.

"As American consumers, we automatically think fruits and vegetables are healthy—need so many servings to be healthy—we don't read info cards, don't think it may be unhealthy because of pesticides."

–Jacksonville Participant (2010), during group discussion about the importance of consumer awareness about farming practices and whether consumers read product labels.

"I don't want pesticides."

–Seffner Participant (2010), responding to the question, "When buying fruits and vegetables, do you consider how they were grown?"

2) Origin of produce

"Where it's from."

–Seffner Participant (2010), responding to the question, "What do you consider when buying fruits and vegetables?"

"Yes. Even if it's not 100 percent organic, I'd want to support a local farmer."

–Orlando Participant (2010), responding to the question, "Are you more comfortable with 'organic' from Florida than from overseas?"

"I don't see where things are coming from."

–Jacksonville Participant (2010), when the group was asked, "What are you concerned about when buying fruits and vegetables, excluding price?"

3) Importance of educating the public about agriculture and food

"Consumer education is important in order for people to know what organic and conventional mean."

–Seffner Participant (2010), responding to the moderator's question, "Should transitional farmers who use organic practices but cannot yet be certified organic receive the same price for their products as conventional farmers?" Before asking the question, the moderator informed the group that conventional agriculture generally relies on synthetic pesticides and fertilizers; organic agriculture generally prohibits synthetic pesticides and fertilizers; and transitional agriculture is farming which uses organic methods, except that the farmland has not been managed organically for a long enough period of time to be eligible for organic certification.

"Why can't it be a committee of farmers [that educates the public]?"

–Jacksonville Participant (2010), following another participant's statement that local and state governments, and the "Department of Ag" should educate the public about farming practices.

"I think advertising on what's in season would help."

–Orlando Participant (2010), answering the moderator's question, "What would help Florida consumers?"

4) Government role

"I wouldn't pay more for transitional products. It's a farmer's business decision. There should be some tax incentive, tax break. Government should support them. It's essentially the gamble of starting a new company."

–Orlando Participant (2010), responding to the question, "Should farmers who are growing organically be paid more?"

"Maybe government can subsidize [farmers' transition to organic production]."

–Seffner Participant (2010), following the question, "Should transitional farmers who use organic practices but cannot yet be certified organic receive the same price for their products as conventional farmers?"

"[The] Department of Ag should step-up and inform the public about farming practices."

–Jacksonville Participant (2010), during consideration of the moderator's question, "What should government be doing?"

III. Florida Grocery Retailers

FOG staff met with representatives of Publix Super Markets, Inc., Sweetbay Supermarket, Whole Foods Market, Inc., and Winn-Dixie Stores, Inc. between May 2010 and Nov. 2010. These retailers comprise about 900 retail store locations in Florida and hundreds more locations in neighboring southeastern states. Meeting participants discussed topics related to expanding profitable markets for specialty crops grown by Florida farmers, including views on marketing transitional agricultural produce. The following information was obtained during meetings with company officials.

'Retailer A'

The company has been expanding its organic offerings after starting out selling only a few organic items. Company representatives report that demand for organic items is currently considered "flat." However,

different strategies have been utilized that have enabled continued growth in the retailer's organic produce sales. The retailer is seeking to expand its organic produce supplier base and is interested in working with Florida organic operations that could meet its volume needs. A representative stated that the company prefers to work through a wholesaler, rather than directly with farmers.

Under certain circumstances, the retailer may be interested in selling transitional produce. An example cited by company representatives is a partnership with a western U.S. fruit producer that grows certified organic and conventional fruit, and is transitioning additional acreage to become eligible for organic certification. In their marketing, the operation pairs the farm name with a brand name common to both the organic and transitional product lines, followed by the word "organic," for the fruit which is certified organic, and "natural," for the transitional fruit. The producer's marketing includes logos, verbiage, and point of sale materials.

Company representatives stated that consumer demand for 'local' and 'seasonal' produce is strong, when these products are available. The retailer has reportedly been questioned by customers for representing south Florida produce sold in its north Florida stores as "local," which has caused the company to shy away from marketing produce as "local."

'Retailer B'

Company representatives report that demand for organic produce is higher than it has ever been. When local and seasonal produce is available, demand is strong. The retailer does not market produce as transitional. Marketing transitional produce was attempted in the past but was found to confuse consumers. The company is interested in meeting transitional growers and establishing relationships before the transition period is complete. Reportedly, the retailer would not offer growers higher prices for transitional produce. However, farmers who develop a marketing profile that explains their farm and its process for transitioning to certified organic production could potentially earn more for their produce.

Company representatives stated that organic broccoli, cauliflower, celery, and potatoes are needed for its east coast stores. The retailer apparently does not need[1] zucchini, yellow squash, or green peppers. For broccoli, cauliflower, and potatoes (but not celery), the retailer would be open to stocking the transitional product, sold as conventional, and marketed as "local," potentially with point-of-sale information profiling the transitional farmer. Transitional growers also have opportunity to sell to the company's prepared foods department. The retailer is interested in forming direct purchasing relationships with Florida farmers.

[1] Our interpretation was of the importance of farmers coordinating with buyers before deciding what crops, and how much of each, to plant.

‘Retailer C’

A company representative stated that many consumers seem more interested in buying locally grown produce than organic produce. The retailer recognizes that consumers seem to be paying close attention to the different food options available to them. One representative stated that consumers are looking for foods that are fresh and less processed, and that many consumers want to avoid additives, hormones, antibiotics, and pesticides.

The retailer’s representatives expressed doubts about possibilities for marketing produce as transitional. One representative questioned whether customers know what transitional means, while another representative thought that the company may not have proper means of informing consumers about the meaning of transitional. Another concern was that an additional label may not give consumers more choice but could make it more difficult for the consumer to make a purchasing decision.

A company representative stated that,” indeed,” the retailer would like to establish direct relationships with growers and that it is important to determine how to create direct relationships that benefit both parties.

‘Retailer D’

Company representatives said organic sales are increasing and organic products are now integrated throughout each of its stores with clear signage. By integrating organic products throughout the store, the retailer says it introduces more shoppers to organic products. A representative stated that the company has signage in its produce sections that explain what organic is. He added that the company, “Wants to work on telling the story of organic better.” The representative said that the company needs to work to convey the “value differential” of organic and mentioned flavor profile as one value of organic produce that could be promoted.

Stores reportedly have “lots of signage” to promote local farmers. According to a representative, almost none of the retailer’s locally grown products are certified organic. There is no labeling or signage for “transitional” produce; it is, “difficult enough to explain organic,” the representative said.

A company representative stated that “local” produce is now organics’ biggest competitor. In a Nov. 2010 focus group conducted by the company, locally grown was more important than organic. Company research indicates that consumers want to know the location/distance of local farms. The retailer defines “local” as produced in Florida.

The company sources organic produce through a distributor and is satisfied with this model. A representative said the company has experimented with sourcing directly from small growers and would not count it out as a possibility. The company is engaged in simple value added processing of fresh-cut fruit at one of its facilities in Florida.

Discussion

We collected input from Florida farmers, consumers, and grocery retailers to learn about specialty crop farmers' challenges, and their views regarding organic production, about consumer views and preferences, and about market opportunities which growers could benefit from, including possibilities for profitable transitional produce marketing. We expected that factors which have been consistently identified as limiting wider adoption of organic farming in the U.S. would be identified as key obstacles to the growth of organic agriculture in Florida, as well. In addition, we thought that information gathered from consumers and large grocery chains would highlight interests that these stakeholders share in common with farmers. We felt the information gathered would suggest ways to expand Florida's organic sector and make Florida-grown specialty crops widely and readily available in markets throughout the state.

Farmers

Findings about Florida farmers' challenges builds upon current awareness and can inform actions to increase growers' prosperity today and make farming a more feasible and likely career choice for beginning farmers. Many independent family farmers view their livelihoods cultivating Florida's soils as tenuous. Producers cite a number of challenges: the cost-price squeeze, with prices they receive for their specialty produce failing to keep up with ever-increasing production costs; competition from imported produce, which many farmers describe as unfair, due to generally lower production and labor standards in exporting countries; ever-increasing regulatory requirements and costs; the extraordinary market power of large brokers, buyers, and vertically integrated food companies; and, significant challenges recruiting labor.

U.S. immigration policies that impact immigrant farmworkers, including raids and worker arrests, and more recently, heightened employer audits (Gardella, 2011) have growers that we spoke with up in arms and warning of a farm labor "crisis." Negative impacts to small and mid- size farmers from market consolidation were voiced compellingly, as previous investigators have found (Cantor & Strochlic, 2009; Strochlic & Sierra, 2007). Both focus groups stated that they need government protection from powerful market actors.

Despite the magnitude of issues such as globalized trade and U.S. immigration policies, it appears crucial that these issues are addressed in order to best ensure a future for Florida and U.S. small and mid-size farmers. In addition, we feel there are actions that can be taken at the state and municipal level, by policymakers and regulators, citizens, entrepreneurs, and farmers themselves to mitigate negative impacts that farmers experience, improve farmers' viability on the land, expand rural economies, and build lasting synergies within Florida's food system.

Thoughts on organic production

Florida specialty crop farmers are interested in the opportunities presented by organic farming. This was demonstrated by a majority of study participants, mostly conventional specialty crop farmers, who said that they have considered beginning organic production, and by the interest conventional farmers expressed in having greater access to more Florida-specific organic production resources, technical support, and production and marketing economic data, which they could use to assess the costs and benefits of getting into organic production. These findings are consistent with others' reports (Greene, et al., , 2010; Johnston, 2010; Katsvairo, et al., 2007; Strochlic & Sierra, 2007). Access to significant technical support and comprehensive information about organic production, economics, and marketing appear needed before greater numbers of conventional farmers decide to start certified organic production.

Although farmers are exploring the opportunities of getting into organic production, they express a number of important concerns. Conventional farmers doubt that they can make a profit raising organic crops. These sentiments echo those of farmers in California and New York (Johnston, 2010; Strochlic & Sierra, 2007). Growers linked profitability to concerns they have about significant weed, pest, and disease pressures that prevail in Florida over much of the year. Farmers realize they would have many fewer chemical "tools" that they could use in an organic system, and these materials may be more expensive and less effective than conventional pesticides. A north Florida farmer and focus group participant who grows strawberries essentially stated there is no way he would attempt to raise his berry crop without having the option of using potent chemical pesticides; he cited the economic risk he felt he would be taking if he were to forego using conventional pesticides.

Another farmer who grows strawberries, blueberries, and vegetables explained, "I don't think Florida is conducive to growing strawberries organically." This conventional strawberry grower who in the past produced organic strawberries and at the time of the meeting maintained certified organic blueberry production, suggested the importance of breeding and selecting for crop lines that will perform well under organic management in Florida. He also stated that, "we need [high] tunnels to grow [strawberries] organically." We note that cost share support for high tunnels, also called hoop houses, has been available to producers in at least 43 states, including Florida, through a pilot project within USDA's, "Know your

Farmer, Know your Food" initiative. The pilot project began in FY 2010 and will assess the impact of high tunnels on crop diversification, reduced input usage, and water conservation (USDA, 2011). High tunnel cost share will be available to Florida farmers again in FY 2012, through NRCS EQIP and the EQIP Organic Initiative. Florida farmers can receive cost share funds for one or more high tunnels, covering a maximum area of 2,178 sq. ft. (USDA-NRCS, Florida eFOTG, 2011).

Farmers at the Seffner focus group stated that organic strawberry growers in California now yield comparably to conventional producers there. However, the Seffner group stated that because the organic producers are now yielding more, there is an over-supply and the organic producers have, "lost their market." We have not verified this assertion but the point is valid: despite high consumer demand for organic products, one of the key obstacles to increasing organic production in the U.S. is small and mid-sized farmers' lack of access to markets (Cantor & Strochlic, 2009; DuPuis, 2006; Johnston, 2010; Strochlic & Sierra, 2007; USDA-ERS, 2010).

Farmers identified additional concerns that seem to impact their willingness to begin organic production. The recordkeeping and audit trail requirements of the NOP, the costs of organic certification, limited organic crop price information[1], and the requirements for split (conventional/organic) operations were cited by farmers as negative factors. Regarding recordkeeping, the NOP requires that records must:

(1) Be adapted to the particular business that the certified operation is conducting;
(2) Fully disclose all activities and transactions of the certified operation in sufficient detail to be readily understood and audited;
(3) Be maintained for not less than 5 years beyond their creation; and
(4) Be sufficient to demonstrate compliance with the [Organic Foods Production] Act and the regulations in this part.

(7 CFR, Section 205.103, Recordkeeping by certified operations)

Organic farmers' recordkeeping system must meet the above requirements, however farmers can and do meet these requirements with simple handwritten records and complete audit trail documentation (e.g., activity logs, input receipts, compliance-related communication with the certifier, etc.) such as could be maintained in an expanding file folder. While some farmers may prefer a computer-based recordkeeping system, it is not a requirement.

Regarding the cost of organic certification, which is an annual expense, there are approximately 50 U.S. based, USDA-accredited certifiers all of which can certify Florida farms to NOP standards. Farmers may wish to inquire with multiple certifying agencies regarding their fees and services. USDA-accredited

[1] The Rodale Institute operates the Organic Price Report: http://www.rodaleinstitute.org/Organic-Price-Report

certifiers can be found on the NOP website[1]. Also, the Farm Bill has consistently included cost-share support for organic certification that reimburses 75% of farmers' annual certification costs, up to a maximum dollar amount. The ceiling for reimbursement has been increased in successive Farm Bills. For fiscal year 2011, operations possessing a valid organic certificate can apply for reimbursement of 75% of costs paid to their certifier, up to $750.

The NOP defines a, "split operation" as, "an operation that produces or handles both organic and nonorganic agricultural products." Thus a conventional farmer could certify part of their operation to organic standards, while retaining the balance in conventional production. The grower would be required to strictly separate the organic and conventional aspects of their production, product handling, and recordkeeping.

Farmers also feel that organic production entails higher labor costs and higher input costs. Of these two important concerns, increased labor requirements of organic production may be the most challenging to alleviate, as organic farming is generally more labor intensive than conventional farming. However, there likely are labor-saving innovations still to be developed. For example, The Rodale Institute has developed the "crimp roller"[2] to terminate a cover crop in mechanical no-till systems. The resulting weed suppressing mat can be planted into on the same tractor pass since the roller is front-mounted and the planter is rear-mounted. By suppressing weeds, such technology may save Florida farmers the expense of having to cultivate or pay workers to hand-weed throughout the crop maturation cycle.

Farmer-to-farmer knowledge exchange, identified by farmers in this work and by other observers (Franz, Piercy, Donaldson, Westbrook, & Richard, 2009) as a preferred means of learning, should be supported in every way possible. Peer learning can facilitate the adoption of innovative practices by farmers statewide. In this vein, farmers may benefit from participating in annual events such as the Florida Small Farms & Alternative Enterprises Conference[3], held each summer in Kissimmee, and AGRItunity, held each January in Bushnell. At farmer conferences and events such as on-farm workshops, farmers can meet and network with expert and beginning farmers alike, make other beneficial connections, and bring themselves to speed on the latest research and extension resources provided by FAMU/CESTA and UF/IFAS.

Regarding the potential for organic production to have higher input costs than conventional systems, a couple of points seem relevant to consider. First, USDA NOP regulations allow a spectrum of farms to meet compliance requirements. The apparent result is that some organic farms approach sustainable production to a much higher degree than others. Whereas many certified organic farms produce a great

---

[1] www.ams.usda.gov/**nop/**

[2] http://www.rodaleinstitute.org/introducing_a_cover_crop_roller; also: http://www.rodaleinstitute.org/20110117_black-plastic-alternatives-year-1

[3] Florida Small Farms & Alternative Enterprises Conference: http://conference.ifas.ufl.edu/smallfarms/index.html

array of annual vegetables and fruits, herbs and flowers, and may integrate perennial crops and livestock, other organic operations closely resemble many conventional farms, where only one or relatively few crops are grownin large continuous blocks. Organic farms that fit this description are often referred to as, "input substitution" farms, since they mirror a conventional system with the notable difference that conventional fertilizers and pesticides have been replaced by organic-compliant pesticides and fertilizers (Rosset & Altieri, 1997). Rosset and Altieri (1997) have asserted that:

> By only addressing environmental concerns, this [input substitution] approach offers little hope of either reversing the rapid degradation of the resource base for future production or of resolving the current profit squeeze and debt trap in which the world's farmers are caught (Abstract, p.283).

In contrast to many conventional farms and input substitution organic farms, Altieri (1995) has described *agroecology* (in part) as such:

> Agroecology goes beyond a one-dimensional view of agroecosystems—their genetics, agronomy, edaphology—to embrace an understanding of ecological and social levels of coevolution, structure, and function. Agroecology encourages researchers to tap into farmers' knowledge and skills and identify the unlimited potential of assembling biodiversity to create beneficial synergisms that provide agroecosystems with the ability to remain or return to an innate state of natural stability. Sustainable yield in the agroecosystem derives from the proper balance of crops, soils, nutrients, sunlight, moisture, and other coexisting organisms…Occassional disturbances can be overcome by a vigorous agroecosystem…Simultaneous with the struggle to fight pests, diseases, or soil deficiency, the agroecologist strives to restore the resiliency and strength of the agroecosystem. In agroecology, biodiversification is the primary technique to evoke self-regulation and sustainability (Preface, pp. ix-x).

Further, while it is readily acknowledged that sustainable production systems must focuson maintaining soil quality and ideally on building healthy soils, this mandate is generally neglected in conventional specialty crop production, and in some organic specialty crop operations as well. While maintaining soil quality is critical to sustaining productivity in a very fundamental sense, we specifically highlight the key role that healthy soils have in pest management, given that many famers in our research cited challenges managing pests and diseases organically as a primary reason they would not transition to organic production. According to Magdoff and Van Es (2009), "[Soil] organic matter is…critical for managing pests—and improved soil management should be the starting point for a pest reduction program on every farm (p.6)".

We believe a key to making organic farming more cost-feasible, and Florida agriculture on the whole more economically and ecologically sustainable, is to channel resources to the development of cropping

systems that produce a diversity of marketable crops, increase soil carbon content, provide wide-ranging agro-ecosystem services that reduce the need for pesticides and external inputs, make efficient use of irrigation water, and which, therefore, can resist external shocks such as climate extremes, market vicissitudes, and escalating input costs tied to rising fuel and energy costs.

Work by UF/IFAS researchers (Andersen, Williamson, & Crocker, 2009) that characterizes the sustainability of different fruit and nut crops for north and north-central Florida may be an important contribution to developing sustainable specialty crop farming systems. Such studies also may expand opportunities for public education about the impacts of producing various specialty crops and may have educational applications in the retail marketplace, where the information could enable consumers to make purchases informed by sustainability metrics.

Thoughts about pesticides

Farmer focus groups' concerns regarding pesticides were raised in multiple contexts. Conventional farmers were quick to express that the general public thinks organic farmers use no pesticides, and told us that this is a false perception held by consumers. Indeed, the farmers who made this assertion are correct: many certified organic farmers use pesticides that are allowed by organic regulations. However, whereas conventional farmers have access to a large array of potent soil fumigants, herbicides, fungicides, bactericides, and insecticides, organic farmers are limited by federal regulations to materials with non-synthetic (natural) active ingredients and a limited number of specified synthetic materials, and can only use these inputs after demonstrating to their certifier that they have implemented required proactive measures that reduce the likelihood and severity of weed, pest and disease infestations.

With evidence of conventional farmers' sensitivities surrounding their use of pesticides, as indicated above and in comments such as that communicated by a focus group participant that, "the marketing of organic [throws] dirt in conventional growers' faces," we state our view that the issue of respect among farmers' practices or ideologies is paramount. Productive societal consideration about how to advance agricultural sustainability will recognize all the benefits of modern conventional agriculture, while not ignoring or downplaying any of its externalized costs and scientifically-founded potential risks. It is also important to acknowledge, as above, that many certified organic farms fail to live up to the principles that founders of the organic movement, and many of today's exemplary organic farmers, regard as fundamental to sustainable agriculture.

We feel it is absolutely appropriate that the most up to date scientific knowledge on the impacts and potential risks of agricultural pesticides be shared openly with the public, which includes farmworkers who are exposed to chemicals on the job, residents and civilians who are exposed due to their proximity to agricultural operations, and consumers who consume pesticides in drinking water and food. When

consensus builds among independent researchers and medical professionals about the risks of certain pesticides or even entire classes of chemicals, this knowledge must, and as expeditiously as possible, trigger reevaluation of pesticide registrations, regulatory testing protocols and product use allowances/restrictions.

Farmers say that one key factor that will drive greater adoption of organic farming is increasing restrictions on their use of pesticides, especially soil fumigants. Soil fumigants, scheduled for registration review by EPA in 2013 (moved up from 2017) pose serious health risks to farmworkers and bystanders (Reeves & Schafer, 2003; U.S. EPA, 2010).

Farmer focus groups also voiced the perception that most consumers who purchase organic food do so to avoid pesticide residues, while a common marketing strength identified by survey respondents are farmers' claims of non-pesticide use. Certain markets with stringent tolerances for pesticide residues may also be driving change in farmers' use of pesticides; a focus group participant indicated this to be the case for Canadian markets that he ships strawberries to. This possibly explains comments by conventional farmers in the Seffner group that numerous pesticides they use are in fact approved for organic production by the Organic Materials Review Institute (OMRI).

Growers use pesticides to protect crops that they have invested significant time and expense into before they receive any income, let alone profit. However, farmers are open to using methods that would entail much less pesticide use, if they gain confidence that they can succeed with and afford the costs of using the new approaches. Developing profitable agroecological farming systems that increase sustainability while reducing pesticide use and external inputs will require the commitment of all the stakeholder groups identified in this report, and may require consumers to expand their fruit and vegetable preferences to include a broader array of crops.

Marketing challenges

Marketing challenges are a significant obstacle to Florida farmers' success. From the farmer's perspective, marketing to large buyers and grocery chains is difficult. Farmers recognize that grocery chains are increasingly promoting locally grown foods but farmers termed this a "marketing ploy." This view may owe to difficulties farmers experience getting their locally grown produce stocked in Florida retail grocery chains or because they feel they are not sharing in the economic success of the expanding market for local foods. Growers reported that large chain stores set more or less fixed prices for produce items and do not change the price to reflect market supply. The reported effect is that farmers are unable

to move their product, which can cause financial loss. Farmers want grocery chains to, "help [us] out when the marketplace is saturated."

Growers also recognized that retailers offer year-round availability of produce items (achieved by sourcing out-of-season domestic produce from abroad) and informed us that if stores altered course and stopped carrying seasonal items year-round, that when Florida's season for those crops rolled around again, consumers would be willing to pay a higher price, allowing farmers to realize greater income.

Gradual steps by grocery chains to 'seasonalize' their offerings could have numerous benefits, including serving to educate consumers about Florida agriculture. Such a gradual shift could facilitate marketplace-driven development of Florida's food system, with farmers, retailers, and consumers involved in shaping a retail landscape that in the foreseeable future could result in a wide variety of wholesomely preserved (e.g., canned, dehydrated, individually quick frozen [IQF]) Florida specialty crops being offered during times of the year when those items are not being grown in Florida, accompanied by corresponding gradual reductions in retailers' sourcing of locally out-of-season produce from abroad. If indeed such a shift were to occur, it could open up opportunities for growth and development of simple value-added specialty crop processing and handling operations throughout the state and region.

Evolution of grocery stores' produce sections to feature greater variety and availability of Florida specialty produce likely depends on consumer acceptance of new produce items and new forms of familiar produce, such as canned, dehydrated, or frozen Florida fruits and vegetables. As such, social scientists' involvement in research that supports such a marketplace evolution, of robust promotion of the FDACS *Fresh from Florida* campaign, and of retailers' own marketing and consumer education initiatives all may be critical.

Rapidly spreading consumer appeal for foods grown by local small and mid-sized farmers offers promising opportunities for collaborations between farmers and retail grocery chains to develop and pilot new ways of marketing Florida's produce and value added specialty crop foods, even testing consumer acceptance of 'new' crops that can be grown by sustainable production methods. Grocery chains' use of farmer focus groups could be a way to initiate direct dialogue and collaboration. Indeed, with increasing fuel costs that could be expected to impact the feasibility of Florida grocers' globalized produce sourcing in the years ahead (Fernandez-Salvador, 2009), and serious concerns over the safety of imported produce, such as communicated by Florida consumer focus groups, and by (81%) of Americans in a 2008 Consumers Union poll (Consumer Reports National Research Center, 2008)), Florida retailers may have as much at stake as Florida farmers in forging truly mutually beneficial partnerships.

Consumers

Support for organic and local

Florida consumers showed strong preference for organic produce, especially locally grown organics. This is consistent with findings from a Thompson Reuters-NPR poll of 3,008 Americans conducted in May 2011, which found that more than 57% of Americans prefer organic over non-organic food. Preference for organic was highest among persons under age 35 (63%), and those with more education (64%) (Thomspson Reuters-NPR, 2011). Similarly, Dimitri & Oberholtzer (2009) have reported that level of education is the one factor that characterizes organic consumers of all ages, races, and ethnicities.

In addition, nearly three-fourths of survey respondents indicated the importance they place on the availability of fruits and vegetables labeled *Fresh from Florida*, and the same proportion say Florida-grown fruits and vegetables are fresher than those from out of state or overseas. Produce freshness is a primary concern of Florida consumers, as evidenced by focus groups and survey responses. However, while consumers are overwhelmingly interested in fresh, local produce, over half of survey respondents said that locally produced fruits and vegetables are not labeled as such.

These findings support a recommendation to explore an 'Organic from Florida' promotional campaign and encourage farmers' participation in, and FDACS' and retailers' promotion of the organic campaign, along with scaled-up promotion of the parent *Fresh from Florida* program. We note that the Seffner focus group communicated the importance of expanding the visibility and impact of the *Fresh from Florida* campaign. Another promising opportunity may be Florida-wide promotion of local labels such as "Redland Raised" and similar initiatives that other locales may develop, either within the FAPC umbrella or independently. In this way, Floridians can come to identify with many regions of the state by the crops and seasonality of production in different locales. Such a strategy also could diminish a concern about local marketing expressed to us by a major grocery chain: customers criticized the company for marketing south Florida produce as "local" in its north Florida stores.

Most of the research participants purchase their fresh fruits and vegetables at wholesale superstores and supermarkets. Focus group participants gave expected reasons for their preference for large retailers, primarily the convenience of being able to purchase all their groceries and household goods at one location. Although most consumers shop for fresh produce at supermarkets and big-box stores, they were critical of the lack of local small farmers' produce that large retailers carry. This suggests that a key reason for the growing market for local foods may be consumers' desires to support smaller-scale farmers. According to the May 2011 Thompson Reuters-NPR poll, Americans' primary reason (36 percent) for preferring organic food is their eagerness to support local farmers (Thompson Reuters-NPR, 2011).

Supporting transition to organic

Florida consumers' support for transitional agriculture was evident in self-completed questionnaires and focus groups. To assess support for a transitional product label in Florida retail markets, the consumer survey included the statement, "Floridians should support a label that identifies Florida produce grown without synthetic pesticides." Survey respondents indicated overwhelmingly that Floridians should support what essentially is a description of a transitional product label, with 90% of Group 1 respondents and 70% of Group 2 respondents strongly agreeing or agreeing with the statement.

A sound definition of transitional agriculture was offered in each of the three focus groups. Members of each group expressed awareness that transitional means moving from conventional to organic status, although not all group members had this understanding. Overall, focus groups indicated support for labeling that identifies transitional Florida specialty crops in the marketplace. However, when probed, some participants stated that they would prefer to buy organic over transitional. On the other hand, speakers in two of the groups indicated that by supporting transitional growers, consumers are helping farmers become organic. There was evidence of preference for transitional over conventional.

Two focus groups raised the possibility of government incentives or subsidies to support Florida farmers' transition to organic, a topic explored also by the survey statement, "Government should not provide incentives for farmers to use organic farming practices." To this statement, 85 percent of Group 1 respondents and 48 percent of Group 2 respondents strongly disagreed or disagreed. That is, 85 percent and 48 percent of Group 1 and 2 respondents, respectively, are supportive of government incentives to assist farmers' transition to organic. This suggests that Floridians may support initiatives that provide economic assistance to farmers transitioning to organic production.

Educating the public

All focus groups stressed the need to build public awareness about agricultural production and marketing topics. For example, in communicating support for transitional product marketing, groups highlighted the need to educate the public on the meaning of organic and conventional production, suggesting that such awareness is necessary to develop successful markets for transitional produce. The importance of educating children about food from a young age was raised in two focus groups. In the Seffner group, an impassioned discussion took place on the failings of parents and schools to teach children about food, including where food comes from and how to prepare it. The discussion encompassed group members' concerns about the low quality of school meals and the opportunity for local farmers to supply wholesome produce through farm to school programs.

The need for public awareness also was raised regarding the importance of informing citizens about the impacts and effects of farming practices, especially regarding pesticides. Concern about pesticides was a common theme in all consumer focus groups. Groups' expressions about the need for public awareness seemed tied to the concern that the public has a right to know about the use, prevalence and impacts of agricultural pesticides, and group members' perceptions that expanding public consciousness about agricultural pesticide use and impacts is key to building support to develop Florida's organic and sustainable farming sector.

Concerns about pesticides

Concerns about agricultural pesticides were raised by all three consumer focus groups and a majority of survey respondents. More Group 1 respondents expressed concerns about pesticides than did Group 2 respondents, yet even Group 2 responses are compelling: 31 percent said that locally produced fruits and vegetables may have pesticide residues unless they're organic; 68 percent said that the availability of fruits and vegetables produced without pesticides is important or very important; and 65 percent agreed or strongly agreed that Florida's environment is negatively impacted by synthetic pesticides and fertilizers. Floridians' concerns about agricultural pesticides parallel findings of a recent national poll (Thompson Reuters-NPR, 2011).

Farmers' use of pesticides is based on federal (U.S. EPA) regulatory approval. According to the EPA website:

> Federal law requires that before selling or distributing a pesticide in the United States, a person or company must obtain registration, or license, from EPA. ***Before registering a new pesticide or new use for a registered pesticide, EPA must first ensure that the pesticide, when used according to label directions, can be used with a reasonable certainty of no harm to human health and without posing unreasonable risks to the environment*** [emphasis ours]. To make such determinations, EPA requires more than 100 different scientific studies and tests from applicants. Where pesticides may be used on [human] food or [livestock] feed crops, EPA also sets tolerances (maximum pesticide residue levels) for the amount of the pesticide that can legally remain in or on foods. (U.S. EPA, 2011)

In addition, like most states, Florida authorities assume responsibility for the registration of pesticides that manufacturers plan to sell in Florida, and also regulates how pesticides can be used within the state. FDACS' Bureau of Pesticides is charged with these responsibilities. According to the FDACS website:

> The Bureau of Pesticides' mission is to provide comprehensive pesticide regulatory programs that respond to state needs by ensuring the protection of public health and the environment. The

> Bureau is responsible for registering pesticide products sold and distributed in Florida. The Bureau also conducts scientific reviews to determine whether human health and the environment may be adversely affected when pesticides are used under Florida conditions and in accordance with label directions and applicable regulations (FDACS, n.d.[c]).

The nation's land grant universities, through both research and extension activities are an additional supporting authority on farmers' use of pesticides. The Florida Cooperative Extension Service, administered by the state's two land grant universities, Florida Agricultural & Mechanical University and the University of Florida, in partnership with federal, state, and county governments, provides a number of services to farmers, including hosting crop production field days, providing direct technical support, and offering trainings, certifications, and continuing education units (CEUs), all of which may provide specific information on pesticide use, such as applicable regulations and safe-use protocols. In addition, research-based information and specific recommendations on the use of pesticides is made available to farmers through UF/IFAS' *Vegetable Production Handbook for Florida*, now in its 14th edition, and through the web-based UF/IFAS Electronic Data Information Source (EDIS).

However, despite the best efforts of authorities to ensure worker and public safety with regard to pesticides, a growing body of science associates human exposures, including occupational, environmental, and dietary exposures, with negative health outcomes. Diseases that have been positively associated with pesticide exposure include Alzheimer's disease (Hayden, et al., 2010; Santibanez, Bolumar, & Garcia, (2007)), asthma (Hoppin, et al.,2008), learning and developmental disorders (Bouchard, et al., 2011; Harari et al., 2010;), birth defects (Chevrier, et al., 2011; Winchester, Huskins, & Ying, 2009), certain cancers (Bassil, Vakil, Sanborn, Cole, Kaur, & Kerr, 2007; Merhi, Raynal, Cahuzac, Vinson, Cravedi, & Gamet-Payrastre, 2007;), and Parkinson's disease (Gatto, Cockburn, Bronstein, Manthripragada, & Ritz, 2009; Wang, Costello, Cockburn, Zhang, Bronstein, & Ritz, 2011).

Direct empirical data show that pesticides are found in humans at every life stage from fertilization to death (Colborn & Carol, 2007, p.1103). And, research has found that food exposures contribute to measureable levels of pesticides in people (Lu, et al., 2006; Lu, et al., 2008; Lu, et al., 2010; Riederer, et al., 2008). Studies of on-farm and off-farm exposures show that pesticides in the blood and urine of those living in agricultural areas often mirror the specific pesticides used in the area, with those living in closest proximity to application sites carrying and excreting the highest concentrations (Colborn & Carol, 2007).
A rapidly expanding area of research involves the effects of minute concentrations of certain chemicals, including pesticides, on bodily systems. Termed *endocrine-disrupting* chemicals, The Endocrine Disruption Exchange (TEDX) offers the following explanation on its website:

> In the very early weeks of prenatal development, when one's entire existence is just a cluster of cells, minute concentrations of chemicals can potentially disrupt any of our biological

> systems…Hundreds of scientific studies have demonstrated endocrine impairment in the central nervous system, the immune and metabolic systems, and many glands and organs. Newly discovered alterations by endocrine disruptors in the gene, molecule and cell environment may have repercussions that do not manifest for decades and can be passed through many generations.
>
> … Broadly defining endocrine disruption now is a gift we must give to future generations, for whom the words 'endocrine disruption' will unfortunately be as common as the word cancer is today. (Endocrine Disruption Exchange, 2011)

Colborn (2010) has further explained:

> In the past few decades, scientists with impeccable credentials have come from outside the discipline of toxicology using entirely new protocols to test chemicals for their safety. Based on the principles of developmental endocrinology, starting with exposures in the womb and taking a disease-based (not chemical-based) approach, they have linked widely dispersed chemicals with many disorders that are currently burdening society and governments with inestimable costs for diagnosis, treatment, alleviation, and life-long care…Unfortunately, legislation is lagging behind science, and currently only the crude reproductive and developmental effects detected in traditional toxicological assays are acknowledged by governments.[1]

Current research about pesticides and human health is not confined to scientific publications and commonly appears in the media, such as an investigation by *The New York Times* as part of their, "Toxic Waters" series regarding the herbicide atrazine (Duhigg, 2009). According to the United States Geological Survey (USGS), atrazine is an, "endocrine-active" compound and one of the most commonly detected pesticides in U.S. ground and surface waters (USGS, 2006; USGS, 2010).

Recent media coverage also includes *TIME Magazine's* 2010 report on a study published in the journal *Pediatrics*, which demonstrated association between heightened levels of organophosphate pesticide metabolites in children's urine with significantly increased incidence of Attention Deficit Hyperactivity Disorder, ADHD (Park, 2010), and an April 2011 *New York Times* story reporting on the publication of three separate studies linking organophosphates to decreased I.Q. scores in school-age children. Dr. Philip Landrigan, professor of pediatrics and director of the Children's Environmental Health Center at Mount Sinai School of Medicine, who was quoted in the April 2011, *New York Times* article, called the results of the three studies, "shocking." According to Dr. Landrigan, the drop in I.Q. scores shown in these studies is comparable to the effects of lead on I.Q., demonstrated by research in the 1980s which resulted in the removal of lead from gasoline, paints, and consumer products (Parker-Pope, 2011).

[1] Source not paginated.

Thus, mounting scientific evidence of correlations between pesticide exposures and an array of serious health disorders, often reported in the mainstream media, seems to be driving increasing public awareness and concern that pesticides may be threatening ours and future generations' health.

Concerns about GMOs

The consumer questionnaire did not explore Floridians' views on the topic of genetically engineered (GE) foods, also known as genetically modified organisms (GMOs). However, concerns were raised about the safety of GE foods at two focus groups. Consumers' concerns about the safety of GE foods are reasonable.

A review of the scientific literature on the safety of GE foods was published in May 2011, by authors who likewise had reviewed information published in international scientific journals in 2000 and 2006. The authors found an equilibrium between the number of studies that suggest GE plants (foods) are as safe as their respective non-GE plants, and the number of studies that raise serious concerns about the safety of GE foods. However, the researchers state, "…it should be noted that most of these studies have been conducted by biotechnology companies responsible of commercializing these GM plants" (Domingo, & Bordonaba, 2011).

USDA maintains a listing of GE crops[1] that it has deregulated under the Coordinated Framework for the Regulation of Biotechnology. Genetically engineered fruits and vegetables that have been deregulated by USDA and can be commercially grown and marketed include, with the number of GE varieties noted parenthetically: beet (2), chicory (1), papaya (2), plum (1), potato (5), squash (2), and tomato (13). GE specialty crops petitioned for deregulated status, for which USDA determination is pending include: apple, beet, potato, and rose.

In 2008 the University of Florida petitioned USDA to deregulate a papaya (*Carica papaya* L.), called "X17-2," which UF faculty genetically engineered to be resistant to papaya ring spot virus. FOG (agency authoring this report) submitted public comments[2] that urged USDA not to approve UF's petition for the deregulation of "X17-2." Despite receiving thousands of comments opposing the legalization of "X17-2" from concerned stakeholders across the U.S., including farmers and food safety advocates, the USDA deregulated UF's GE papaya and the decision[3] was published in the Federal Register Sept. 1, 2009.

In the U.S., labeling of genetically engineered foods sold to consumers is not required (Byrne, 2010,). We do not know whether genetically engineered "X17-2" papaya or other GE specialty crops have been

[1] http://www.aphis.usda.gov/biotechnology/not_reg.html
[2] http://www.foginfo.org/docs/papaya.pdf
[3] http://www.aphis.usda.gov/brs/fedregister/BRS_20090901.pdf

commercially grown in Florida, or whether such crops have been marketed to consumers in Florida or elsewhere.

Awareness of farmers' challenges

Consumer focus groups exhibited awareness of some of the significant challenges experienced by Florida farmers, which farmer focus group participants themselves described. For example, a Florida resident who participated in the Seffner focus group described how harsh winter conditions during 2009-2010 delayed maturation of central Florida strawberries, and that by the time Florida strawberries were ready for harvest, U.S. markets had been flooded by imported strawberries. The individual stated that NAFTA is, "putting the screws to the American farmer." As with farmer focus groups, consumer focus groups likewise identified that such challenges were not necessarily unique to Florida farmers but are experienced by U.S. specialty crop producers in general.

Regarding imported produce, all consumer focus groups raised concerns about the safety of produce imports. Consumers stated or alluded to perceptions they have about a general lack of crop production standards and enforcement in producing countries, as well as inadequate food safety inspection of produce imports by U.S. authorities. Two of the three groups specifically cited concerns about pesticide residues on produce imported from abroad.

As with the Seffner farmer group, consumer focus groups also recognized that Florida grocery chains stock seasonal produce items year-round. Consumers did not extend this line of discussion as far as farmers did (the Seffner farmer group suggested that if stores would cease stocking out-of-season produce, that when Florida's season for those items returned, consumers would pay more for them), however, the consumer groups gave no indication that they favored stores' stocking of seasonal items year-round. Consumers described how Florida watermelons that were in season at the time of focus groups (June 25 and July 10), would also be stocked by grocery chains during wintertime and that imported out-of-season produce may cost more.

Farmers markets

Nearly 50 percent of survey respondents shop at farmers markets, at least, "fairly often." Focus group members likewise indicated their interest in farmers markets and described their views and experiences about shopping at these venues. According to a recent poll, farmers markets are where most Americans prefer to obtain produce (43%), whereas (32%) indicated they prefer to purchase produce at grocery stores (Thompson Reuters-NPR, 2011). There is much interest and even strong preference for farmers markets. However, consumers who are inclined to shop at farmers markets report challenges in doing so.

According to research participants, limitations to shopping at farmers markets include difficulty finding markets, limited days/hours of operation, inconvenient location, and the inability of most markets to accept credit and debit cards. The preference or even necessity that time-pressed shoppers have to procure needed groceries, household goods, and services with one-stop shopping works against the slower pace of farmers markets but suggests that locating markets near big box stores, schools, hospitals and other venues that people frequent to meet regular needs or partake in regular activities may increase patronage. In Tallahassee, "Growers' Markets" co-organized by the FAMU Statewide Small Farm Program are located near Florida DOE, DOH, and DEP office buildings and are also accessible to commuters.

Some consumers recognize that some market vendors are not farmers but resellers who purchase their produce from wholesale supply chains. Markets that lack transparency about vendors and their produce may deter consumers who want to support local farmers. Resellers also compete directly with farmers and in so doing may discourage other farmers from selling at the market. Resellers conceivably may benefit markets by maintaining consumer interest during lulls in local production or by increasing the overall variety of produce at markets, but their presence is problematic when they are not required to identify themselves as resellers, a situation that resembles consumer fraud. In their report about breaking down market barriers that impact smaller scale organic farmers, one recommendation made by Cantor and Strochlic (2009), was to enforce product claims made by farmers market vendors.

There has been consistent impressive growth in the number of farmers markets in the U.S. (USDA-AMS, 2011b). Yet, markets may experience challenges to expand their customer base beyond core supporters, and may at the same time struggle to attract farmers. Much work has been done around the country to understand how to develop markets that deliver long-term benefits to farmers, consumers, communities and local economies. The national non-profit Farmers Market Coalition[1] maintains comprehensive resources, tools, and support linkages that can benefit successful farmers markets and those in formative stages. At the state level, the member-based Florida Association of Community Farmers Markets[2] works to improve farm-to-table connections by supporting farmers and educating consumers on the benefits of buying local. In addition, FDACS maintains a listing[3] of farmers markets by county that can help consumers, farmers, and market supporters connect with farmers markets around the state.

Farm to school

The Seffner focus group arrived at the benefits and opportunities presented by Farm to School, that is, local farmers selling their fresh produce directly to K-12 schools, after an energetic discussion concerning today's parents' and children's lack of knowledge about wholesome foods, and the prevalence of lower quality foods provided in schools. Thus, Farm to School was suggested by the group as a way to expand

[1] http://farmersmarketcoalition.org/
[2] https://sites.google.com/a/facfm.org/facfm/
[3] http://www.floridaagriculture.com/consumers/farmers_markets.htm

societal awareness of the farm-fork connection, improve kids' nutrition, and provide a marketing opportunity to farmers. We agree that Farm to School represents one of the best imaginable win-win-win opportunities to improve the health of young Floridians, provide farmers with secure markets, and increase awareness about Florida agriculture. We call attention to work being done to advance Farm to School by FDACS, FDOE, the Florida Farm to School Alliance, the New North Florida Cooperative, numerous County Food and Nutrition Services Directors, and farmers, and suggest that if policymakers and citizens join the aforementioned stakeholders and truly invest in making Florida Farm to School a nationally-renown program, we may realize measurable society-wide benefits that exceed all expectations.

Efforts to increase school boards' food purchasing budgets may be necessary to realize the full benefits of Farm to School. We suggest exploring all appropriate means of accomplishing this at county, state and federal levels. The Healthy, Hunger-Free Kids Act[1], signed into law in December 2010, and the Florida Department of Agriculture and Consumer Services (FDACS) recently assumed responsibility to administer school meals[2], both present great potential opportunity to create a successful network that would connect schools and farmers across the state, while providing fresh and nutritious food to children. We emphasize the importance of making Farm to School a viable opportunity for organic and transitional farmers whose higher production costs may, given school boards' current food budgets, preclude their participation.

Grocery retailers

Large grocery chains, along with wholesale superstores, are where most Floridians purchase most of their fruits and vegetables. Therefore, the produce purchasing practices and motivations of these businesses are fundamental to increasing in-state availability of Florida-grown specialty crops and improving the viability of Florida agriculture. And, while Florida farmers may access profitable out-of-state markets by selling to distributors, Florida grocery chains and superstores may represent one of the best long-term markets for Florida farmers.

Representatives of three major grocery chains that we met with expressed interest in purchasing directly from Florida farmers, while a fourth company prefers to work through distributors. Nonetheless, all expressed interest in building relationships with Florida farmers. Retailers' interest in establishing direct

[1] See http://www.whitehouse.gov/sites/default/files/Child_Nutrition_Fact_Sheet_12_10_10.pdf Last accessed August 4, 2011.
[2] See the Healthy Schools for Healthy Lives Act at http://www.flsenate.gov/Session/Bill/2011/1312/BillText/Filed/PDF Last accessed August 4, 2011.

relationships could translate into greater income for farmers, assuming, among other factors, that grocery chains are willing to arrange cost-feasible transport of produce from farms and produce packing/storage facilities, or that farmers themselves have the capability of shipping their produce. Another key factor may be the willingness of grocery chains to receive farmers' deliveries at individual store locations, rather than requiring that produce be shipped to their distribution hubs.

Representatives of two grocery chains described demand for organic products as increasing, while another reported that demand for organics is, "higher than it has ever been." Another company reported "flat" demand for organics, but indicated that clever marketing allowed them to continue to increase organic sales. All retailers reported that consumer demand for local/seasonal produce is strong. Two of the companies qualified their statement by saying that demand for local produce is strong, when it is available. Two retailers indicated greater consumer interest in local produce than for organic.

There is strong demand for local produce because of strong sentiments consumers attach to supporting smaller scale farmers and sustainable production methods. It seems rational, then, that retailers would be willing to expand the array of Florida-grown local fruits, vegetables, herbs, nuts, mushrooms, etc., that they offer, as doing so would likely increase the number of calendar days that local produce is available in their stores.

Recommendations

1. Expand and enhance in-state markets for Florida-grown specialty crops.

Strategy 1.1
Expand direct collaborations between farmers and grocery chains to develop *Fresh from Florida* retail produce sections.

Strategy 1.2
Explore possibilities for introducing an *Organic from Florida* promotional label campaign to join the Florida Department of Agriculture and Consumer Services (FDACS) *Fresh from Florida* Agricultural Promotion Campaign.

Strategy 1.3
Develop policies and programs to make Florida's schools a reliable, profitable market for specialty crop farmers, including transitioning and certified organic farmers who may have higher production costs than conventional producers.

Strategy 1.4
Enhance farmers markets utilizing tested strategies to expand patronage and benefits to community members, and expand the role of markets as educational venues.

Strategy 1.5
Develop farmer-controlled production and marketing associations that can increase small and mid-size farmers' access to more and larger markets and reduce individual grower-members' business costs and risks.

Strategy 1.6
Expand trainings for farmers on marketing, business skills, and risk and credit management.

Strategy 1.7
Establish a platform by which producers, buyers, consumers, policymakers, and other stakeholders can convene and formulate policy recommendations that will promote sustainability of the state's food system and increase opportunities for in-state marketing of specialty crops, including organic and transitional crops.

2. Research, develop and implement state and local initiatives to increase the number of farms and total acreage in Florida certified to USDA National Organic Program standards.

Strategy 2.1
Expand long-term, multi-disciplinary organic farm system (agroecological) research encompassing production, marketing, and economics.

Strategy 2.2
Promote farmer to farmer networking to encourage learning and sharing that may increase organic farming knowledge, skills, and confidence among Florida's specialty crop growers, including beginner farmers.

Strategy 2.3
Establish an interactive networking platform for research applicable to Florida's organic farmers to better provide useful, easily accessible and current information.

Strategy 2.4
Enhance county- and state-level funding for Florida's land grant universities' sustainable and organic agriculture research and extension programs and activities.

Strategy 2.5
Explore local and state incentives to increase the number of organic farms in Florida and Florida's total certified organic acreage.

Strategy 2.6
Initiate policies and actions at state and municipal levels to promote the utilization of available resources and suitable wastes as feedstock materials for large-scale composting operations that can supply area farmers.

Conclusions

We found common interests among farmers, consumers, and grocery retailers to develop Florida's organic agriculture industry and expand and enhance in-state markets for Florida-grown specialty crops. Conventional farmers who are inclined to start organic production indicate that economic feasibility data for organic systems, and Florida-specific organic crop production, marketing, and technical support beyond what currently exists, may be necessary before they are willing to adopt organic farming. Access to affordable organic production inputs is another limiting factor.

Poor access to reliable, profitable markets, the cost-price squeeze, and challenges hiring farm labor are key factors limiting the success of Florida's small and mid-sized specialty crop farms which cause farmers to question whether their businesses can remain viable. Developing agroecological production systems that produce a wide array of marketable crops well suited for Florida's fields and markets may be key to ensuring Florida farmers' viability and sustaining the productivity of Florida agriculture.

Pesticide use is a major concern of Florida consumers in relation to food safety and environmental concerns. Grocery retailers are cognizant of consumers' desires to avoid pesticide residues. Consumers are inclined to support Florida farmers' transition to organic by purchasing transitional farmers' produce and view the possibility of government incentives to support farmers' transition to organic favorably. Grocery chains are not inclined to market transitional produce as such but expressed openness to exploring innovative marketing strategies with transitional farmers that could increase farmers' bottom lines. Grocery chains and wholesale superstores may benefit from establishing veritable partnerships with farmers, presenting opportunities to innovate and create retail produce sections that support Florida farmers, develop robust local supply chains, promote *Fresh from Florida*, and strengthen Florida's economy overall.

Farm to School holds great market potential for Florida farmers and great potential to improve the health and nutrition of K-12 youth while building public awareness about Florida agriculture. Farmers markets that can implement strategies to increase viability for grower-vendors, broaden the consumer base and expand their roles educating the public about Florida agriculture will help strengthen Florida's agricultural and food systems.

Numerous challenges and obstacles that limit agriculture's benefits to Floridians can be overcome with policy commitments and close collaboration among Florida agriculture's many stakeholders.

References

Altieri, M.A. (1995). *Agroecology: The science of sustainable agriculture.* (2nd ed.). Boulder, CO: Westview Press, Inc.

Andersen, P.C., Williamson, J.G., & Crocker, T.E. (2009). Sustainability assessment of fruit and nut crops in north Florida and north central Florida. UF/IFAS EDIS Publication HS765. Retrieved from http://edis.ifas.ufl.edu/mg367

Bassil, K.L, Vakil, C., Sanborn, M., Cole, D.C., Kaur, J.S., & Kerr, K.J. (2007). Cancer health effects of pesticides. *Canadian Family Physician, 53*, 1704-1711.

Bengtsson, J., Ahnstrom, J., & Weibull, A-C. (2005). The effects of organic agriculture on biodiversity and abundance: a meta-analysis. *Journal of Applied Ecology, 42*, 261-269. doi: 10.1111/j.1365-2664.2005.01005.x

Bellows, B. (2002). Protecting water quality on organic farms. *ATTRA's Organic Matters Series*, Retrieved Sept. 23, 2010 from http://attra.ncat.org/attra-pub/PDF/om-waterquality.pdf

Bouchard, M.F., Chevrier, J., Harley, K.G., Kogut, K., Vedar, M., Calderon, N.,…Eskenazi, B. (2011). Prenatal exposure to organophosphate pesticides and IQ in 7-year old children. *Environmental Health Perspectives*, *119*(8), 1189-1195. doi:10.1289/ehp.1003185

Byrne, P. (2010). Labeling of genetically engineered foods. Colorado State University Extension publication no. 9.371. Retrieved August 17 from http://www.ext.colostate.edu/pubs/foodnut/09371.html

Cantor, A., & Strochlic, R. (2009). Breaking down market barriers for small and mid-sized organic farms. Report by the California Department of Rural Studies. Retrieved July 22, 2011 from http://www.ams.usda.gov/AMSv1.0/getfile?dDocName=STELPRDC5081306

Chevrier, C., Limon, G., Monfort, C., Rouget, F., Garlantezec, R., Petit, C.,…Cordier, S. (2011). Urinary biomarkers of prenatal atrazine exposure and adverse birth outcomes in the PELAGIE birth cohort. *Environmental Health Perspectives, 119*(7), 1034-1041. doi: 10.1289/ehp.1002775

Colborn, T. (2010). Endocrine disruption, public health, and national and international security. Available from Physicians for Social Responsibility Web site: http://www.psr.org/environment-and-health/environmental-health-policy-institute/responses/endocrine-disruption-public-health-and-national-and-international-security.html

Colborn, T., & Carol, L.E. (2007). Pesticides, Sexual Development, Reproduction, and Fertility: Current Perspective and Future Direction. *Human and Ecological Risk Assessment*, *13*(5), 1078–1110. doi: 10.1080/10807030701506405

Comis, D. (2007). No shortcuts in checking soil health. *Agricultural Research*. Retrieved from http://www.ars.usda.gov/is/AR/archive/jul07/soil0707.pdf

Consumer Reports National Research Center. (2008). Food-Labeling Poll NRC #2008.18. Retrieved August 17, 2011 from http://www.greenerchoices.org/pdf/foodpoll2008.pdf

DeMuth, S. (1993). *Defining Community Supported Agriculture.* Alternative Farming Systems Information Center, USDA National Agricultural Library. Retrieved Sept. 14, 2010 from http://www.nal.usda.gov/afsic/pubs/csa/csadef.shtml

Dimitri, C., & Oberholtzer, L. (2009). *Marketing U.S. organic foods: Recent trends from farms to consumers.* USDA Economic Research Service Economic Information Bulletin Number 58. Retrieved from http://www.ers.usda.gov/Publications/EIB58/EIB58.pdf

Domingo, J.L., & Bordonaba, J.G. (2011). A literature review on the safety assessment of genetically modified plants [Abstract]. *Environment International, 37*(4), 734-742. doi:10.1016/j.envint.2011.01.003

Duhigg, C. (2009, August 22). Debating just how much atrazine is safe in your water glass. *The New York Times*. Retrieved from http://www.nytimes.com/2009/08/23/us/23water.html

DuPuis, E. M. (2006). Civic markets: Alternative value chain governance as civic engagement. *Crop Management.* doi: 10.1094/CM-2006-0921-09-RV

Electronic Code of Federal Regulations. (2010a). Title 7: Agriculture Part 205—National Organic Program Subpart A—Definitions. Retrieved September 5, 2010 from http://www.gpoaccess.gov/cfr/index.html

Electronic Code of Federal Regulations. (2010b). Title 7: Agriculture Part 205—National Organic Program Subpart B—Applicability. Retrieved August 15, 2011 from http://www.gpoaccess.gov/cfr/index.html

Endocrine Disruption Exchange. (2011). Defining endocrine disruption. Retrieved July 15, 2011 from http://www.endocrinedisruption.com/endocrine.define.php

FDACS. (n.d.[a]). Florida Department of Agriculture and Consumer Services. Overview of Florida agriculture. Retrieved August 16, 2011 from http://www.florida-agriculture.com/agfacts.htm

FDACS. (n.d.[b]). Florida Department of Agriculture and Consumer Services. Information for consumers. Retrieved August 16, 2011 from http://www.florida-agriculture.com/consumers.htm

FDACS. (n.d.[c]). Florida Departmen. of Agriculture and Consumer Services. Bureau of Pesticides. Retrieved August 17, 2011 from http://www.flaes.org/pesticide/

Fernandez-Salvador, L. (2009). The persistence of Florida's small organic farms in the face of growing demand for organic products. (Master's thesis) University of Florida.

Franz, N.K., Piercy, F.P., Donaldson, J., Westbrook, J., & Richard, R. (2009). How farmers learn: Improving sustainable agricultural education. Virginia Cooperative Extension publication 2904-1291. Retrieved from https://pubs.ext.vt.edu/2904/2904-1291/2904-1291_pdf.pdf

Gardella, A. (2011, July 13). As immigration audits increase, some employers pay a high price. *The New York Times*. Retrieved from http://www.nytimes.com/2011/07/14/business/smallbusiness/how-a-small-business-can-survive-an-immigration-audit.html?

Garratt, M.P.D., Wright, D.J., & Leather, S.R. (2011). The effects of farming system and fertilisers on pests and natural enemies: A synthesis of current research. *Agriculture, Ecosystems & Environment, 141*(3-4), 261-270. doi:10.1016/j.agee.2011.03.014

Gatto, N.M., Cockburn, M., Bronstein, J., Manthripragada, A.D., & Ritz, B. (2009). Well-water consumption and Parkinson's disease in rural California. *Environmental Health Perspectives, 117*(12), 1912-1918. doi:10.1289/ehp.0900852

Greene, C., Dimitri, C., Lin, B-H, McBride, W., Olberholtzer, L., & Smith, T. (2009). Emerging issues in the U.S. organic industry. USDA Economic Research Service Economic Information Bulletin No. EIB-55. Retrieved from http://www.ers.usda.gov/Publications/EIB55/

Greene, C., Slattery E., & McBride, W.D. (2010). America's organic farmers face issues and opportunities. *Amber Waves*. Retrieved from http://www.ers.usda.gov/AmberWaves/june10/Features/AmericasOrganicFarmers.htm

Grudens-Schuck, N., Lundy Allen, B., & Larsen, K. (2004). *Focus Group Fundamentals*. Iowa State University Extension methodology brief. Retrieved from http://www.extension.iastate.edu/publications/pm1969b.pdf

Harari, R., Julvez, J., Murata, K., Barr, D., Bellinger, D.C., Debes, F., & Grandjean, P. (2010). Neurobehavioral deficits and increased blood pressure in school-age children prenatally exposed to pesticides. *Environmental Health Perspectives, 118*(6), 890-896. doi:10.1289/ehp.0901582

Hayden, K.M., Norton, M.C., Darcey, D., Ostbye, T., Zandi, P.P., Breitner, J.C.S., & Welsh-Bohmer, K.A. (2010). Occupational exposure to pesticides increases the risk of incident AD: The Cache County study. *Neurology, 74*(19), 1524-1530. doi: 10.1212/WNL.0b013e3181dd4423

Hole, D.G., Perkins, A.J., Wilson, J.D, Alexander, I.H., Grice, P.V., & Evans, A.D. (2005). Does organic farming benefit biodiversity [Abstract]? *Biological Conservation 122*(1), 113-130. doi:10.1016/j.biocon.2004.07.018

Hoppin, J.A., Umbach, D.M., London, S.J., Henneberger, P.K., Kullman, G.J., Alavanja, M.C.R., & Sandler, D.P. (2008). Pesticides and atopic and nonatopic asthma among farm women in the Agricultural Health Study. *American Journal of Respiratory and Critical Care Medicine, 177*, 11-18. doi: 10.1164/rccm.200706-821OC

Johnston, S. (2010). Assessing farmer interest in transition to organic production and barriers to expansion of organic production in New York State. Report by New York State Department of Agriculture and Markets. Retrieved from http://www.agmkt.state.ny.us/ap/organic/docs/organic_production_transition.pdf

Katsvairo, T.W., Wright, D.L., Marois, J.J., & Rich, J.R. (2007). Transition from conventional farming to organic farming using bahiagrass. *Journal of the Science of Food and Agriculture, 87*(15), 2751-2756. doi: 10.1002/jsfa.3002

Kramer, S.B., Reganold, J.P., Glover, J.D., Bohannan, B.J.M., & Mooney, H.A. (2006). Reduced nitrate leaching and enhanced denitrifier activity and efficiency in organically fertilized soils. *Proceedings of the National Academy of Sciences, 103*(12), 4522-4527. doi:10.1073_pnas.0600359103

LaSalle, T., & Hepperly, P. (2008). Regenerative organic farming: A solution to global warming. Rodale Institute. Retrieved from http://www.rodaleinstitute.org/files/Rodale_Research_Paper-07_30_08.pdf

Liebig, M.A., & J.W. Doran. (1999). Impact of organic production practices on soil quality indicators. *Journal of Environmental Quality, 28*(5),1601-1609. Retrieved from http://ddr.nal.usda.gov/bitstream/10113/16715/1/IND22010708.pdf

Lotter, D.W., Seidel, R., & Liebhardt, W. (2003). The performance of organic and conventional cropping systems in an extreme climate year. *American Journal of Alternative Agriculture, 18*(2). Retrieved from http://donlotter.net/lotter_ajaa_article.pdf

Lu, C., Barr, D.B., Pearson, M.A., & Waller, L.A. (2008). Dietary intake and its contribution to longitudinal organophosphorus pesticide exposure in urban/suburban children. *Environmental Health Perspectives, 116*(4), 537-542. doi:10.1289/ehp.10912

Lu, C., Schenck, F.J., Pearson, M.A., & Wong, J.W. (2010). Assessing children's dietary pesticide exposure: Direct measurement of pesticide residues in 24-hr duplicate food samples. *Environmental Health Perspectives, 118*(11), 1625-1630. doi:10.1289/ehp.1002044

Lu, C., Toepel, K., Irish, R., Fenske, R.A., Barr, D.B., & Bravo, R. (2006). Organic diets significantly lower children's dietary exposure to organophosphorus pesticides. *Environmental Health Perspectives, 114*(2), 260-263. doi:10.1289/ehp.8418

Magdoff, F. (2007). Ecological agriculture: Principles, practices, and constraints. *Renewable Agriculture and Food Systems, 22*(2), 109–117. doi:10.1017/S1742170507001846

Magdoff, F., & Van Es, H. 2010. *Building soils for better crops: Sustainable soil management*. (3rd ed.) Sustainable Agriculture Publications: Waldorf, MD. Available from http://www.sare.org/index.php/content/download/841/6675/file/BSBC%203.pdf

Merhi, M., Raynal, H., Cahuzac, E., Vinson, F., Cravedi, J.P. & Gamet-Payrastre, L. (2007). Occupational Exposure to Pesticides and Risk of Hematopoietic Cancers: Meta-Analysis of Case-Control Studies [Abstract]. *Cancer Causes & Control,18(10), 1209-1226.*

Newman, Y.C., Wright, D.W., Mackowiak, C., Scholberg, J.M.S., & Cherr, C.M. (2011). Benefits of cover crops for soil health. UF/IFAS Extension publication SS AGR 272. Retrieved from http://edis.ifas.ufl.edu/ag277

O'Hara, J.K. (2011). Market forces: Creating jobs through public investment in local and regional food systems. Report by Union of Concerned Scientists. Retrieved from http://www.ucsusa.org/assets/documents/food_and_agriculture/market-forces-report.pdf

OTA. (2011). Organic Trade Association. Industry statistics and projected growth. Retrieved August 16, 2011 from http://www.ota.com/organic/mt/business.html

Park, A. (2010, May 17). Study: A link between pesticides and ADHD. *TIME Magazine*. Retrieved from http://www.time.com/time/health/article/0,8599,1989564,00.html

Parker-Pope, T. (2011, April 21). Pesticide exposure in womb affects I.Q. *The New York Times*. Retrieved July 19, 2011 from http://well.blogs.nytimes.com/2011/04/21/pesticide-exposure-in-womb-affects-i-q/

Reeves, M. & Schafer, K.S. (2003). Greater risks, fewer rights: U.S. farmworkers and pesticides. *International Journal of Occupational and Environmental Health, 9*(1), 30-39. Retrieved from http://www.bvsde.paho.org/bvsacd/ijoeh/09-01-02.pdf

Riederer, A.M., Bartell, S.M., Barr, D.B., & Ryan, P.B. (2008). Diet and nondiet predictors of urinary 3-Phenoxybenzoic acid in NHANES 1999–2002. *Environmental Health Perspectives, 116*(8), 1015-1022. doi:10.1289/ehp.11082

Rosset, P.M. & Altieri, M.A. (1997). Agroecology versus input substitution: A fundamental contradiction of sustainable agriculture. *Society & Natural Resources, 10*(3), 283-295. Retrieved from http://www.geography.siu.edu/pdfFiles/Courses/429/429%20Readings%20S2011/8%20Rosset%20Altieri%20input%20sub.pdf

Santibanez, M., Bolumar, F., & Garcia, A.M. (2007). Occupational risk factors in Alzheimer's disease: A review assessing the quality of published epidemiological studies. *Occupational and Environmental Medicine, 64*(11), 723-732. doi: 10.1136/oem.2006.028209

Strochlic, R. & Sierra, L. (2007). Conventional, mixed and "deregistered" organic farmers: Entry barriers and reasons for exiting organic production in California. California Institute for Rural Studies. Retrieved from http://www.cirsinc.org/index.php/publications/archives/category/10-farm-labor.html#

Sustainable Agriculture Research and Education (SARE). (n.d.). Transitioning to Organic Production. Available from http://www.sare.org/Learning-Center/Bulletins/National-SARE-Bulletins/Transitioning-to-Organic-Production

Swenson, D. (2006). The economic impacts of increased fruit and vegetable production and consumption in Iowa: Phase II. Prepared for the Regional Food Systems Working Group Leopold Center for Sustainable Agriculture. Retrieved from http://www.leopold.iastate.edu/pubs/staff/files/health_0606.pdf

Thompson Reuters-NPR. (2011). Health poll: Organic food. Retrieved from http://www.factsforhealthcare.com/pressroom/NPR_report_OrganicFoods.pdf

USDA. (2011, January 7). USDA provides update on seasonal high tunnel pilot. News release no. 0003.11. Retrieved from http://www.usda.gov/wps/portal/usda/usdahome?contentidonly=true&contentid=2011/01/0003.xml

USDA-AMS. (2011a). Agricultural Marketing Service. Commodity areas: Definition of specialty crops. Retrieved from http://www.ams.usda.gov/AMSv1.0/scbgpdefinitions

USDA-AMS. (2011b). Agricultural Marketing Service. More than 1,000 new farmers markets recorded across country as USDA directory reveals 17 percent growth. Retrieved from http://www.ams.usda.gov/AMSv1.0/farmersmarkets

USDA-AMS NOSB. (2002). National Organic Standards Board "transitional product" recommendation. Retrieved August 17, 2011 from http://www.ams.usda.gov/AMSv1.0/getfile?dDocName=STELDEV3104574

USDA-ERS. (2010). USDA Economic Research Service. Data sets: Organic production. Retrieved from http://www.ers.usda.gov/data/organic/

U.S. EPA. (2011). Pesticides: Regulating pesticides. Retrieved July 14, 2011 from http://www.epa.gov/pesticides/regulating/index.htm#eval

U.S. EPA. (2010). Implementing new safety measures for soil fumigant pesticides. Retrieved August 10, 2011 from http://www.epa.gov/opp00001/reregistration/soil_fumigants/implementing-new-safety-measures.html

USGS. (2010, May 19). Commonly used atrazine herbicide adversely affects fish reproduction. USGS Newsroom. Retrieved from http://www.usgs.gov/newsroom/article.asp?ID=2467&from=news_side

USGS. (2006). Pesticides in the nation's streams and ground water, 1992-2001: A summary. Fact Sheet 2006-3028. Retrieved from http://pubs.usgs.gov/fs/2006/3028/

USDA-NRCS. (2009). Conservation Stewardship Program's contribution to organic transitioning: The Organic Crosswalk. Retrieved August 17, 2011 from http://www.nrcs.usda.gov/Internet/FSE_DOCUMENTS/nrcs143_006960.pdf

USDA-NRCS. (2010). Environmental Quality Incentives Program (EQIP) Support for organic growers. Retrieved July 14, 2011 from http://www.nrcs.usda.gov/programs/eqip/organic/index.html

USDA-NRCS, Florida eFOTG. (2011). Field Office Technical Guide. Seasonal high tunnel system for crops. Florida conservation practice standard interim 798 guidance. Retrieved August 15, 2011 from http://efotg.sc.egov.usda.gov/references/public/FL/FL798GS.pdf

Wang, A., Costello, S., Cockburn, M., Zhang, X., Bronstein, J., & Ritz, B. (2011). Parkinson's disease risk from ambient exposure to pesticides [Abstract]. European Journal of Epidemiology, 26(7), 547-555. doi: 10.1007/s10654-001-9574-5

Winchester, P.D., Huskins, J., & Ying, J. (2009). Agrichemicals in surface water and birth defects in the United States. *Acta Pædiatrica, 98*, 664-669. doi:10.1111/j.1651-2227.2008.01207.x

York, M., Lau, M.H., Hanagriff, R.D., & Constance, D. (2007). Identifying barriers to entry into the organic market and possible strategies to increase the likelihood of success for potential organic producers. Federal State Marketing Improvement Program Project Awarded to the Texas Department of Agriculture. Final report. Retrieved from http://www.ams.usda.gov/AMSv1.0/getfile?dDocName=STELPRDC5064321