

# Sustainable Food Systems for Georgia's Agrarian Future

October 2011



Georgia Sustainable Agriculture Consortium

## Acknowledgements

Many people put time and effort into the development of the ideas in this white paper. A special thanks goes to all these on the Sustainable Agriculture Research and Education Planning Committee, who worked and discussed and argued, but came together with a real plan for the future. This project would not have been possible without funding from Southern SARE in the form of a planning grant. We are grateful for their support.



## *Georgia Sustainable Agriculture Coalition Partners*

(as of Oct. 2011)

University of Georgia

Fort Valley State University

Georgia Department of Agriculture

Georgia Organics

Georgia Farm Bureau

Community Health Works, Macon

Valdosta State University

USDA Agricultural Research Service

Georgia USDA Natural Resources Conservation Service



## Contents

Acknowledgements .....	2
Executive Summary .....	4
Introduction.....	6
Five-year Strategy.....	9
Food Hub Development.....	9
Key Systems to Supply Food Hubs.....	10
Sustainability Metrics.....	13
Summary .....	15
References Cited .....	16
Appendix A .....	17
The Planning Process	
Planning Committee Members .....	19
Appendix B .....	21
Needs identified during the planning process and examples of existing resources available to meet those needs.	

## Food Hubs

---

### Sustainable Food Systems for Georgia's Agrarian Future

By Julia Gaskin,  
Sustainable Agriculture  
Coordinator, The  
University of Georgia  
College of Agricultural  
and Environmental  
Sciences

Assisted by  
Sustainable Agriculture  
Research and  
Education Planning  
Committee

## Executive Summary

Increasing demand for food, decreasing availability of fossil fuels, potassium and phosphorus sources, slim profit margins for farmers, and persistent poverty in many rural communities, demand new approaches to food production. Georgia's strong agricultural heritage and ability to produce a wide variety of fruits, vegetables and animal products put us in a strong position to lead these new approaches.

Although agriculture is the state's largest economic sector, it can become an even larger economic engine creating more jobs and revitalizing rural communities. Today, the majority of Georgia's agricultural production is concentrated on large-scale production with vegetables and meats going into wholesale markets throughout the nation and the world. There is a growing, but much smaller-scale production model where produce and meats are directly sold to the consumer.

What is missing in our current system are midscale farms and the infrastructure for these farms to access wholesale and institutional markets that want local, sustainably-produced foods. Local/regional food hubs are a way to provide this missing link.

Because food hubs aggregate, distribute and sometimes process local and regional foods, they have potential to improve rural economies and quality of life through job generation and increased viability of small to midscale farms. This type of infrastructure can also encourage a new generation of farmers. Successful creation and implementation of food hubs must be a cross-sector effort. Leadership roles must be available for members of academia as well as public and private sectors.

The agricultural colleges at Georgia's land grant institutions — the University of Georgia and Fort Valley State University — and the Georgia Department of Agriculture are leading the effort to form the **Georgia Sustainable Agriculture Consortium**. This consortium will bring land-grant universities together with other interested academic institutions and key governmental and non-governmental stakeholders to pursue science-based information to aid the development of food hubs in Georgia.

Key partners in this effort are: Georgia Organics, Georgia Farm Bureau, Community Health Works, Valdosta State University, USDA Agricultural Research Service, and Georgia USDA Natural Resource Conservation Service. A united effort will foster the progress of interdisciplinary research, extension, and learning needed to support this new layer in our food system.

*The mission of the Georgia Sustainable Agriculture Consortium is to foster the development of sustainable agricultural systems and local/regional food hubs to improve rural economies and communities.*

As an interdisciplinary team of researchers and stakeholders, the consortium members will collaborate to create and deliver science-based information to current and future farmers, students, policymakers, and members of the public.

---

*The mission of the Georgia Sustainable Agriculture Consortium is to foster the development of sustainable agricultural systems and local/regional food hubs to improve rural economies and communities.*

For Georgia to develop a viable food hub system, we need key information. We need to assess potential barriers to food hub development and to evaluate the infrastructure needed to support these hubs. We need sustainability metrics to compare various agricultural production and distribution systems both at the farm and regional scale. The metrics combined with geographic data will create strategies for developing food hubs to minimize environmental impacts and maximize rural community benefits.

Sustainable agricultural production systems will be needed to support local/regional food hubs in Georgia. Based on extensive stakeholder and faculty input, two production systems that have promise are midscale vegetable production and mixed animal species grazing systems. Both University of Georgia and Fort Valley State University have existing programs focused on sustainable vegetable production systems. UGA has a strong extension/research program in grazing systems using cattle while FVSU has a similarly strong program focused on small ruminants. Building on these programs, with additional research and extension effort, we can move the food hub concept forward quickly. Similar past efforts have helped improve the profitability and sustainability of Georgia farms.

Another key element that can move us forward quickly is the existing food processing and food safety expertise at the universities and the Department of Agriculture. These resources can be enhanced to provide support for developing regional food hubs. There is increasing public, government and farmer interest in partnerships for such an effort.

Food hub development will not be successful without substantial farmer and public input. The *Georgia Sustainable Agriculture Consortium* will coordinate members to pursue this input to answer key information needs and gain widespread public support.

Goals for the consortium over the next five years are to:

- form a working network structure that will facilitate interaction between key institutions and stakeholders,
- quantify barriers and infrastructure needed for local/regional food hub development,
- conduct life cycle analysis of vegetable and grazing systems,
- begin research on multi-species grazing systems,
- increase research and extension on midscale vegetable production systems, and
- create two local/regional food hubs in Georgia.

Long term, the consortium will foster the growth of small to midscale agriculture in Georgia, improve the sustainability of existing and new farms, and promote cooperation to build a more secure economic and environmental future for the state.



## Introduction

There is a need for new farming systems that minimize environmental impacts, increase profitability and improve the quality of life for farmers, farm workers and rural communities. Farming systems that address these three goals and provide the needed food, fiber and fuel for society are defined as sustainable agriculture (USDA National Institute of Food and Agriculture, 2011).

Achieving a sustainable agriculture system is a process. Different approaches are needed to develop sustainable farms depending on the conditions of the farm, the abilities and interest of the farmer, and the needs of the community. However, with increasing demand for food, decreasing availability of fossil fuels, potassium and phosphorus sources, slim profit margins for many farmers, and persistent poverty in many rural communities, it is clear that new approaches to agriculture are necessary (National Research Council, 2010). We need to move agricultural systems toward models that will increase their sustainability (National Research Council, 2010).

Demand for local, sustainable food far exceeds its supply. In Georgia, farmers markets have increased from 12 to 85 over the past six years. Community Supported Agriculture programs (CSAs) have grown from eight to over 50. Georgia also has increasing interest in Farm to School programs and has a growing number of institutions wanting to purchase more locally produced, sustainable food. Some institutions seeking local foods are Emory University, Kennesaw State University, and Tanner Medical Center in Carrollton. However, limited technical and policy support, as well as lack of infrastructure hamper the development of local, sustainable food systems.



**What is sustainable agriculture?** There are many definitions out there. The Georgia Sustainable Agriculture Coalition uses the USDA definition that broadly defines sustainable agriculture. In addition, members of the planning group developed a qualitative list of indicators of a sustainable agriculture system by obtaining input from a wide variety of sources including the Agricultural Systems Research Workshop participants, other faculty involved in sustainable agriculture, farmers, USDA Agricultural Research Service researchers, CAES administrators, as well as NGOs involved in sustainable agriculture and food systems work. These indicators are qualitative questions that can be asked to scan whether an agricultural system is sustainable. It is a qualitative way to ask where improvements in agricultural systems need to be made (Table 1).

**Profitability**

- Generates profits over the long-term
- Maximizes farmer/rancher control over crops and prices
- Supports a family at a standard of living that includes health care, education and vacations
- Minimizes reliance on government subsidies
- Has a succession plan

**Environmental stewardship**

- Builds and maintains soil organic carbon to level appropriate for soil and climate
- Prevents soil erosion
- Balances nutrient inputs and outputs
- Maintains clean water
- Maximizes water conservation
- Minimizes dependence on non-renewable resource fuels and products
- Minimizes use of toxic substances
- Uses integrated pest management practices
- Maximizes crop rotation
- Encourages diversity of plant varieties and/or livestock breeds
- Encourages diversity of plants and animals within the landscape
- Minimizes land under agricultural production
- Minimizes air pollution problems such as odors, dust and greenhouse gasses
- Minimizes solid waste generation

**Quality of life for farmers, ranchers, farm workers, and their community**

- Allows time for family, hobbies, and/or community participation
- Provides safe, nutritious food, fiber, and/or biomass energy
- Treats farm workers well
- Treats animals humanely
- Increases the surrounding communities' economic and civic well being, i.e. provides the capacity for the community to support local schools, houses of worship, or other community institutions
- Contributes to the scenic beauty of community
- Contributes to farming/ranching being seen as respected professions
- Encourages involvement of the next generation

---

A food hub is a new model that looks to provide a physical place where produce or meat products can be brought together in quantities that are useful for institutional and/or wholesale markets, so small and midscale farmers can access new markets.

**Table 1. Qualitative indicators of a sustainable agriculture system.**

Because research has shown local food systems narrowly defined as being within a 100-mile radius are not widely feasible, there is increasing interest in local/regional food hubs. A food hub is a new model that looks to provide a physical place where produce or meat products can be brought together in quantities that are useful for institutional and/or wholesale markets, so small and midscale farmers can access new markets. They can also serve to distribute products and sometimes process products. The USDA defines a food hub as: “A centrally located facility with a business management structure facilitating the aggregation, storage, processing, distribution, and/or marketing of locally/regionally produced food products” (USDA Agricultural Marketing Service, 2010).

Our vision for sustainable agriculture in Georgia is an intertwining network of farms integrated into a local/regional food system to provide a healthy rural environment, economy and community.

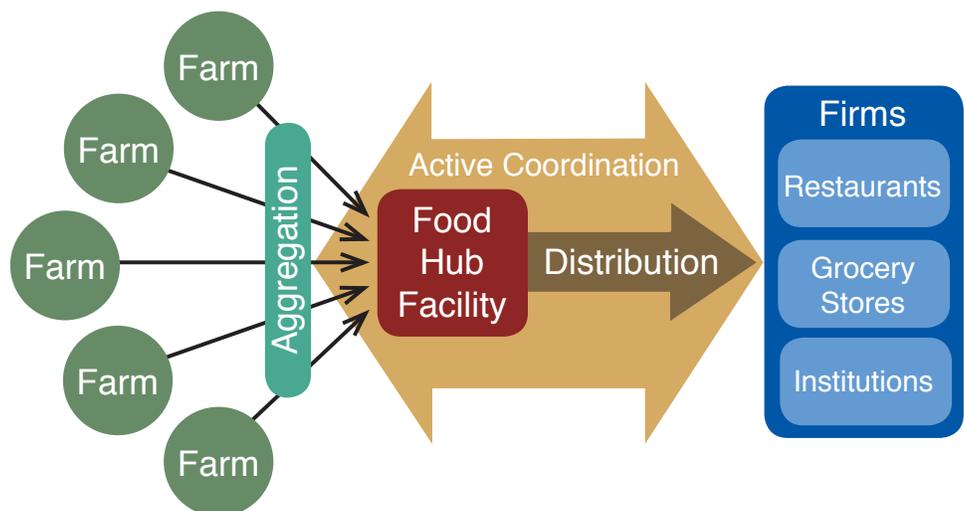
A key feature of food hubs is that food is source identified, i.e. the consumer knows the farm from which the food came.

The structure of food hubs is developing. There are several different models throughout the U.S. In the Southeast, there are several food hubs that began as non-profit organizations as is the case with Appalachian Harvest in Abingdon, Va., and Local Food Hub in Charlottesville, Va. There are cooperatives such as Eastern Carolina Organics, Pittsboro, N.C., which began as a non-profit and is now a self-sustaining cooperative.

In Georgia, White Oak Pastures is a private company that would meet the definition of a food hub in that it works with local cattle producers to provide grass-fed beef to wholesale customers. White Oak Pastures provides 44 local jobs, all of which pay more than minimum wage, and offers health insurance (Will Harris, pers. com).

Recent research by the USDA Agricultural Marketing Service indicates that of 20 food hubs in existence for several years, 10 were profitable or broke even. Seven other food hubs projected they would break even within two to three years (National Good Food Network webinar, May 19, 2011).

Because the potential for developing food hubs is high and could have many benefits for the citizens of Georgia, the University of Georgia College of Agricultural and Environmental Sciences (UGA CAES), Fort Valley State University College of Agriculture, Family Sciences, and Technology (FVSU CAFST), and the Georgia Department Agriculture (GA Dept of Ag) with other partners have formed the **Georgia Sustainable Agriculture Coalition** – a multidisciplinary group of faculty and stakeholders that will develop sustainable agricultural systems to support local/regional food hubs. Our vision for sustainable agriculture in Georgia is an intertwining network of farms integrated into a local/regional food system to provide a healthy rural environment, economy and community.



Food Hub diagram courtesy of Craig Page.

## Five-year Strategy

The *Georgia Sustainable Agriculture Consortium* consists of faculty and professionals from many disciplines and institutions with the involvement of a diverse group of stakeholders.

*The mission of the Georgia Sustainable Agriculture Consortium is to foster the development of sustainable agricultural systems and local/regional food hubs to improve rural economies and communities.*

As an interdisciplinary team of researchers and stakeholders, the consortium members will collaborate to create and deliver science-based information to current and future farmers, students, policymakers, and members of the public.

The consortium will have **three initial focus areas:**

- developing food hubs,
- conducting research on key issues for small to midscale vegetable and multi-species grazing systems to support the food hubs, and
- developing quantitative metrics of sustainability.

The initial focus on small to midscale production is because these farms may have the greatest potential to encourage young people to enter farming and begin economic development in rural counties. Consortium members will be involved in and contribute to different projects based on the interest and skills of the individual members.

## Food Hub Development

The food hub concept is relatively new and there are many different models that are being developed throughout the U.S. Although some of these models are entirely entrepreneurial and are being developed by private companies, others have developed as non-profit organizations that morph into private companies, and others remain non-profit based. The consortium will aid efforts in developing a food hub whether it is private or non-profit by supplying the information needed to guide these efforts and linking efforts of the many organizations that may be involved.

Key information is needed for the development of food hubs and sustainable agriculture systems. Faculty at UGA, FVSU, and the other participating academic institutions will conduct research to answer specific questions aimed at developing sustainable food hubs from production to the consumer. Beginning with the two production systems discussed later, the consortium will develop research on the midscale vegetable and multi-species grazing systems to provide science-based information to policy makers so barriers to food hub development can be removed and/or food hubs in certain regions could be encouraged. Many of these questions focus on barriers and infrastructure.



The consortium will aid efforts in developing a food hub whether it is private or non-profit by supplying the information needed to guide these efforts and linking efforts of the many organizations that may be involved.

Barrier and infrastructure questions include:

- determining primary barriers to food hub development.
- developing strategies to overcome these barriers.
- evaluating models to aggregate producers to bring midscale produce to institutional and retail markets.
- exploring the optimum geographic areas for vegetable or meat-based food hubs.
- determining key crops suitable for midscale vegetable production by growing characteristics and/or market demand.
- calculating the critical mass of farms and livestock needed to support a meat-based food hub.
- evaluating which combination of species decreases risk and maximizes profits.
- assessing how a food hub affects a community's economy and quality of life.

Extension also has an important role to play in providing science-based information to farmers and members of the public. For example, FVSU and UGA Extension can conduct grower meetings to let farmers know about the potential for food hubs as a way to access wholesale and institutional markets. They can provide training in post-harvest handling or food safety so growers can access this market. They can work with managers at a food hub to disseminate information on what the market demands and help coordinate supply. They can also play an important role within the community in developing community support and identifying potential grass-roots efforts where a food hub might be developed.

The Georgia Department of Agriculture issues permits and inspects food distribution and aggregation centers ensuring food safety. It also promotes products through programs like "Georgia Grown." GA Dept of Ag can aid food hub development by streamlining the permitting and regulatory process, as well as helping promote products.

Non-governmental Organization (NGO) members provide a critical link with their constituents and can play a critical role in education and advocacy. Because the consortium will help coordinate issues ranging from production to distribution, NGOs with a broad range of interests should be involved. Current members include Georgia Organics, Georgia Farm Bureau, and Community Health Works, Macon. Other interested organizations may include those focusing on increased access of fresh foods in K-12 schools, food and health issues, planners, economic development, or agricultural groups.

## Key Systems to Supply Food Hubs

**Midscale Vegetable Production Systems** – The current models of vegetable production occupy two ends of a spectrum. There are examples of successful small-scale operations (<10 acres) that primarily market directly to consumers through farmers markets, CSAs, box programs, or Internet sales. These producers also sell to restaurants that specialize in local and gourmet food. Many of these producers are Certified Organic or Certified



Naturally Grown. On the other end of the spectrum are large-scale, small fruit and vegetable producers. These producers sell to brokers and work through a large-scale distribution system where the produce is shipped to grocery stores, institutions and restaurants throughout the country. In Georgia, these growers predominantly use a black plastic/fertigation production system. This system is efficient in producing vegetables, but is fossil fuel dependent. We need to look at ways to reduce this dependency.

Although there is interest in local and organic produce by institutions across the state and a strong and growing Farm to School program, there are few small to midscale vegetable operations that can supply these markets and little infrastructure or cooperative models to support these farms. Sustainable practices for weed control are a key challenge throughout the state. Labor is another issue. Nitrogen management is also a challenge, particularly for growers in the coastal plain with sandy soils. Methods used by smaller growers (< 5 acres) that design their system to reduce fossil fuel use and maximize on-farm inputs, may not be easily scaled-up for larger production systems. The consortium will coordinate and link faculty interested in conducting research on these key issues.

Examples of research to improve weed control include:

- evaluating a mechanized system (spader, bedder, etc.) to develop optimal practices for permanent beds,
- comparing alternative cover crops for weed control in no-till or minimum till systems,
- testing various cultivation techniques on vegetable crops, and
- integrating animals into vegetable production systems to help with weed control, nutrient management, and insect management in ways that would also minimize food safety risks.

Examples of research to improve nitrogen management include:

- improving prediction of the amount of nitrogen supplied by cover crops and the soil, and
- methods to synchronize organic nitrogen release with crop needs.

The goal of this research is to develop an evaluation tool that helps match management to specific sites. We also hope to develop a web-based tool for farmers that would predict nitrogen mineralization from the soil and cover crops based on common climatic conditions or current weather conditions. The tool would also predict nitrogen mineralization over a short period (1 month) and over the growing season, and help to provide cost comparisons for different nitrogen sources.

This research will provide a sound technical base for the vegetable production systems needed for food hubs. It builds on a base of expertise at FVSU, UGA, and USDA ARS as well as current existing research on cool season vegetable rotations for midscale systems, integrated weed control, food safety for small farms, and nitrogen mineralization from cover crops. The Sustainable and Organic Production Team, a group of extension



specialists, scientists, and county agents working with critical NGOs and farmer advisors, are positioned to transfer this technology into the farming community.

**Year-Round Multi-Species Grazing Systems** – Grazing systems in Georgia are predominantly single species – cattle, goats, or sheep; however, there are producers who co-graze cattle and goats, cattle and sheep, or even cattle and poultry. The potential advantages of multi-species grazing are that different species use different types of forage and can reduce weed or insect pressures while increasing the pounds of protein produced per acre. In addition, multi-species grazing adds an additional source of income and may reduce risk. Although there are producers who are using these types of systems, there is relatively little information available, particularly for Georgia conditions.

Challenges for multi-species grazing are finding a suitable combination of forages to provide year-round grazing that meets both species nutritional needs, determining which blend of species is best for particular conditions, which grazing system works best, and the economics of these systems. There is also little infrastructure for processing animals so that the meat can be sold into wholesale or institutional markets.

The first step in identifying a system to concentrate research on is conducting a survey of the multi-species grazing systems currently in use by farmers in Georgia.

Examples of research topics related to multi-species grazing systems include:

- identifying forage/browse species to be used in year-round grazing (e.g. bermudagrass, bahiagrass, novel endophyte tall fescue, sericea lespedeza, rye, annual ryegrass, annual and perennial legumes),
- testing two or three forage systems for animal productivity, parasite impact, and economic return,
- identifying the best species to be used and the best grazing system such as leader/follower, etc.,
- optimizing paddock/fencing water access, and
- paddock/small plot assessment of alternate forages.

This research will provide a sound technical base for the multi-species grazing systems for meat-based food hubs. FVSU has a strong small ruminant program that can partner with the UGA CAES forage and beef cattle programs. The USDA ARS in Watkinsville has a strong research program on grazing impacts on soil and water quality. There are active extension programs on the economics of grazing and risk management for both cattle and small ruminants at UGA and FVSU, and the Forage Extension Team is positioned to move this research into the farming community.



## Sustainability Metrics

The term “sustainable agriculture” means different things to different people. The USDA definition stresses that sustainable agriculture has to be profitable, but also needs to minimize environmental impacts and have a positive effect on the quality of life for farmers, farmworkers, and the community. One approach to improving sustainability is having good data on particular production and distribution systems and a method to compare these systems. We need to know the baseline conditions of current systems and compare those conditions with improved management systems. The consortium will work to develop quantitative metrics for sustainability to evaluate various agricultural systems in Georgia and the Southeast. These metrics will include ways to assess environmental impacts, long-term profitability and quality of life.

Life cycle analysis (LCA) is increasingly used as a method to evaluate the sustainability of systems. Several members of the planning committee are already using this tool to evaluate agricultural systems. Consortium members will be pursuing more funding to conduct LCAs, particularly to compare different scales and types of vegetable production/distribution and grazing systems.

Conducting a full-fledged LCA on every different agricultural system used in Georgia would be overwhelming; consequently, the consortium will develop a subset of key metrics of sustainability that researchers can incorporate into various projects to allow comparisons of agricultural systems. These metrics may be based on proposed metrics from other areas that can be adapted for Georgia conditions. At least some of these metrics would take a modified LCA approach, e.g. looking at energy use from cradle to grave including energy used in machinery, fertilizer, etc.

Examples of potential metrics are:

*economic*

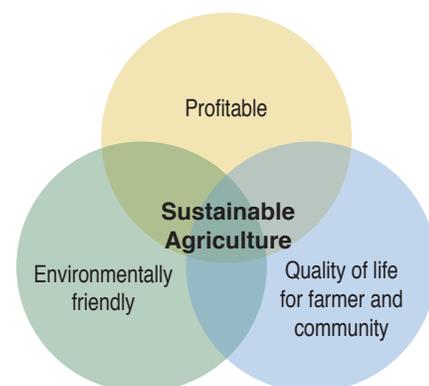
return on assets,

*environmental*

total energy use per calories and nutrients produced per acre,  
 consumptive water use per calories and nutrients produced per acre,  
 nutrient balance per calories and nutrients produced per acre,  
 soil organic carbon stratification ratio<sup>1</sup>,  
 biodiversity rank,

*social*

animal welfare,  
 farmer social network (through social network analysis), and  
 county poverty level or percent food insecurity.

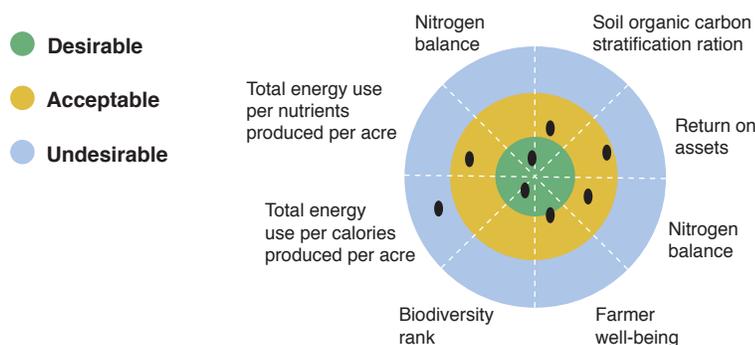


<sup>1</sup>Proposed metric by Dr. Alan Franzluebbers, USDA ARS JPC Natural Resource Center, Watkinsville, GA

The use and acceptance of any set of metrics will only be successful with meaningful stakeholder input. The consortium will host a series of stakeholder meetings to obtain this input. The metrics agreed upon should be quantitative; represent key factors in terms of environmental impact, long-term profitability, and quality of life. In addition, at least the environmental and economic metrics should be able to be aggregated across farms to a larger geographic area to assess community or regional sustainability.

In order to compare different production systems at the farm level, the metrics will need to be integrated. Figure 1 illustrates a method to visually assess sectors that need improvement and allow a comparison between systems. The consortium will develop a method to allow comparisons of systems at the farm and regional levels.

We are not proposing these metrics as a way to rank farms for marketing purposes, but to have a science-based method to compare systems to determine which agricultural production systems might be most sustainable for a particular region and to identify areas that need improvement in a particular agricultural system so they can move toward greater sustainability.



**Figure 1. Visual image to assess overall sustainability of an agricultural system or farm** (adapted from Giampietro, 2003).



This approach will be piloted by first comparing existing vegetable production systems and a mixed grazing system. Investigators will assemble research data from the Southeast that can be used in the assessment and identification of data gaps. Data gaps will be filled by conducting on-farm assessments and specific research projects. Where possible, metrics will be scaled up to a regional level and used with geographic information to identify areas that minimize environmental impacts and maximize potential community benefits. This information can be used to determine infrastructure gaps and areas that can benefit from policies to help increase infrastructure.

The goal of this approach is to develop a methodology to provide science-based information to encourage sustainable agricultural production systems that can serve local/regional food hubs.

## Summary

Georgia has a strong agricultural heritage and the ability to produce a wide variety of fruit, vegetable and animal products. Although agriculture is one of the state's largest economic sectors, it has the potential to become an even larger economic engine.

Currently, agricultural production is concentrated on large-scale production with vegetables and meats going into wholesale markets throughout the nation and the world. There is a growing, but much smaller production model where produce and meats are directly sold to the consumer.

Our current system is lacking midscale farms and the infrastructure for small to midscale farms to access wholesale or institutional markets that want local, sustainable products. Food hubs are a way to provide this missing link. Because food hubs aggregate, distribute, and process local/regional foods, they have potential to improve rural economies and quality of life through job generation and improving the viability of midscale farms.

The *Georgia Sustainable Agriculture Consortium* brings together land grant universities with other interested academic institutions and key governmental and non-governmental stakeholders to pursue science-based information to aid the development of local/regional food hubs. It will foster the expansion of interdisciplinary research, extension, and learning needed to support this new layer in our current food systems.

Key information is needed to develop viable food hubs in Georgia. This includes assessment of barriers and the infrastructure needed to support these hubs, and sustainability metrics to compare various agricultural systems both at the farm and regional scale. The metrics can be used with geographic data to create strategies for developing food hubs to minimize environmental impacts and maximize rural community benefits. We have outlined an approach for two research and extension programs — vegetable and multi-species grazing systems — that have promise for supporting food hubs in Georgia. The research program will answer critical questions so successful models for these systems can be developed.

Goals for the consortium over the next five years are to:

- form a working network structure that will facilitate interaction between key institutions and stakeholders,
- quantify barriers and infrastructure needed for local/regional food hub development,
- conduct life cycle analysis of vegetable and grazing systems,
- begin research on multi-species grazing systems,
- increase research and extension on midscale vegetable production systems, and create two local/regional food hubs in Georgia.

Long term, the consortium will foster the growth of midscale agriculture in Georgia, improve the sustainability of existing and new farms and promote cooperation to build a more secure economic and environmental future for the state.



## References Cited

- Giampietro, M. 2003. *Multi-Scale Integrated Analysis of Agroecosystems*, CRC Press.
- National Research Council. 2010. *Toward Sustainable Agriculture Systems in the 21st Century*. National Academy Press. [www.nap.edu](http://www.nap.edu).
- USDA Agricultural Marketing Service. 2010. *Regional Food Hubs: Linking producers to new markets*. Know Your Farmer, Know Your Food (KYF2) Regional Food Hub Subcommittee. [www.ams.usda.gov/AMSV1.0/getfile?dDocName=STELPRDC5088011](http://www.ams.usda.gov/AMSV1.0/getfile?dDocName=STELPRDC5088011). Accessed May 18, 2011.
- USDA National Institute of Food and Agriculture. 2011. *Legal Definition of Sustainable Agriculture*. [www.csrees.usda.gov/nea/ag\\_systems/in\\_focus/sustain\\_ag\\_if\\_legal.html](http://www.csrees.usda.gov/nea/ag_systems/in_focus/sustain_ag_if_legal.html). Accessed May 20, 2011.



## Appendix A

### The Planning Process

The current planning efforts have built on several steps Fort Valley State University (FVSU) and the University of Georgia (UGA) have taken over the past five years. In 2006, a faculty taskforce at the College of Agricultural and Environmental Sciences (CAES) at UGA met to identify current gaps in sustainable agriculture programs and make recommendations on how CAES should address those gaps. The taskforce identified several existing areas of expertise that could be developed into focus areas. These included: certified organic blueberry, Vidalia onion, and peanut production; grazing beef and dairy production; local food systems; and sustainable biofuel production.

During 2007, UGA partnered with FVSU on several projects to obtain stakeholder input for developing sustainable agriculture programs. A Southern SARE Model State Enhancement Grant was used to conduct focus groups and survey fruit and vegetable growers to identify areas that these farmers would like to see additional research and training. Interest was expressed in methods to reduce inputs and maintain soil fertility, water conservation, fuel conservation, alternative marketing, and crop rotations. In June 2008, FVSU and UGA along with Southern SARE sponsored a Sustainable Agriculture Summit at FVSU that was attended by more than 190 people with strong minority and limited resource farmer participation. Small group breakout sessions identified critical needs. The top four were: education of young people, development of local meat processing facilities, "place-based" research, and additional local infrastructure (e.g. seed cleaning or organic processing facilities). Three of these four priorities are related to developing the infrastructure needed for a food hub.

Based on this stakeholder input and faculty interest, the current planning process originally focused on outlining a small fruit/vegetable production system and a grazing system that would represent models of sustainability to support a local food system. The process began with an Agricultural Systems Workshop held in Athens on March 17, 2010 and linked to FVSU with 50 participants from all schools or colleges at UGA and FVSU, faculty from Valdosta State University, personnel from USDA Agricultural Research Service as well as from the Center for Disease Control. The workshop allowed several collaborative project teams to form. Participants were asked to volunteer to be a member of the planning group that would outline an approach for a Southern SARE matching grant proposal.

Because the goals of the planning grant included teaching as well as research and extension, a small group of nine faculty, representing most departments at UGA CAES, met to discuss how sustainable agriculture could be integrated into teaching and degree programs. Dr. Jean Bertrand, Assistant Dean for Academic Affairs at CAES, provided a list of sustainable agriculture programs in the United States for reference. After discussion, the group concluded that the Organic Agriculture Certificate Program and the Local Food Systems Certificate Program provided good opportunities for undergraduate students, and the focus should be on developing a Sustainable Agriculture Certificate for graduate students that could be modeled on the Meteorology Certificate at UGA. A certificate was thought to be a better approach than trying to develop an interdepartmental major. The group wanted to pursue joint course development with FVSU, particularly for Maymester courses. These recommendations were shared with FVSU and fed into the planning process.

A planning group of 38 people was drawn from interested workshop participants with addition of county agents from UGA and FVSU as well as stakeholders representing farmers,



USDA Natural Resources Conservation Service, Georgia Department of Agriculture, and Georgia Organics. Before the planning meeting, a list of resources for vegetable and grazing systems currently available in Georgia was developed (Appendix B).

The planning group met at FVSU on July 28, 2010 with 26 participants. The planning process was narrowly defined to meet the requirements for a Southern SARE matching grant proposal that would identify a small fruit/vegetable production and a grazing system as focus areas that would support a local food system. The group was to outline a specific system to focus on, identify resources available or missing to develop those systems, and identify how the potential matching grant would be used to build these focus areas. The group discussed the overall goals of a matching grant then broke into vegetable and grazing small groups to outline approaches for these systems. For both systems, we wanted to detail research to answer specific questions on profitability, quality of life, or environmental impacts; allow creation of demonstration projects so that science-based information is available for farmers and the public; and engage students in learning about sustainable agricultural production and food systems. The grazing group identified key research topics and an approach to address those topics. The vegetable group took a broader approach and identified overarching goals that needed to be addressed to support sustainable agriculture in Georgia. Several key questions were asked by the planning group. What agricultural systems are most sustainable for Georgia? How do the existing agricultural systems in the state compare in terms of a life cycle analysis for energy use, water use and impacts, and land use? How can we develop sustainable farming systems that will support a family?

To finish the planning process, the group decided to form a vegetable sub-committee that would identify specific research, teaching and extension goals for this system. This group met through a conference call to identify these goals. Finally, we also developed a survey to prioritize all the different ideas identified in the planning meeting. The entire planning group was asked to vote on their top three priorities. The votes were tallied using a weighted average and the top six priorities were:

- developing a Statewide Strategic Plan,
- establishing a Sustainable Agriculture Center/Institute,
- quantifying Energy Use, Needs and Impacts for Sustainable Agriculture
- increasing Available Markets,
- creating and Documenting Successful Models for Midscale Vegetable Production Systems, and
- creating and Documenting Successful Models for a Year-round Multi-species Grazing System.

These priorities were distilled into forming the Georgia Sustainable Agriculture Coalition and its goals.

As the political and economic landscape has changed over the past year and half of the planning process, the goal of the planning group has evolved to answer some key questions about sustainable agriculture systems and provide a map for efforts over the next five years to pursue systems that will support a local/regional food hub. Consequently, although the approach developed could be used for a Southern SARE matching grant proposal, its larger purpose is to coalesce and guide sustainable agriculture efforts over the next five years.

## Planning Committee Members

Bryan Barrett, Area Resource  
Conservationist, USDA Natural Resources  
Conservation Service, Athens, GA

John Bernard, Professor – Animal &  
Dairy Science, College of Agricultural and  
Environmental Sciences, University of  
Georgia, Tifton, GA

Jean Bertrand, Associate Dean of Academic  
Affairs, College of Agricultural and  
Environmental Sciences, University of  
Georgia, Athens, GA

Mark Boudreau, Public Service Assistant –  
Biological & Agricultural Engineering,  
College of Agricultural and Environmental  
Sciences, University of Georgia, Athens, GA

George Boyhan, Professor – Horticulture,  
College of Agricultural and Environmental  
Sciences, University of Georgia, Athens, GA

James Brown, Assistant Dean – Resident  
Instruction, Professor of Horticulture  
(Organic Production), College of Agriculture,  
Family Sciences and Technology, Fort Valley  
State University, Fort Valley, GA

Steve Brown, Associate Dean of Extension,  
College of Agricultural and Environmental  
Sciences, University of Georgia, Athens, GA

Emily Cantonwine, Plant Pathology,  
Valdosta State University, Valdosta, GA

Terry Chandler, Farmer, Still Water Farms,  
Danielsville, GA

Matt Comerford, Former Cooperative  
Extension Agent – Meriwether County,  
College of Agricultural and Environmental  
Sciences, University of Georgia, Athens, GA

Naomi Davis, Farmer, Davis Farms,  
Roberta, GA

Tripp Eldridge, Program Specialist,  
Community Health Works, Macon, GA

Dory Franklin, Soil Scientist, USDA  
Agricultural Research Service,  
Watkinsville, GA

Alan Franzluebbbers, Ecologist, USDA  
Agricultural Research Service,  
Watkinsville, GA

Carrie Furman, Post Doctoral Assoc. –  
Anthropology, Biological & Agricultural  
Engineering, College of Agricultural and  
Environmental Sciences, University of  
Georgia, Athens, GA

David Gattie, Assistant Professor –  
Biological & Agricultural Engineering  
College of Agricultural and Environmental  
Sciences, University of Georgia, Athens, GA

Will Getz, Professor – Animal Science,  
Extension Specialist – Animal Science,  
Interim Extension ANR Program Leader,  
Fort Valley State University, Fort Valley, GA

Dennis Hancock, Assistant Professor –  
Forages, Crop & Soil Science, College of  
Agricultural and Environmental Sciences,  
University of Georgia, Athens, GA

Govind Kannan, Professor – Animal Science,  
Dean College of Agriculture, Family  
Sciences and Technology, Fort Valley State  
University, Fort Valley, GA

Karol Kelly, County Extension Agent –  
Bibb County, College of Agricultural and  
Environmental Sciences, University of  
Georgia, Macon, GA

Brou Kouakou, Assistant Professor – Animal  
Sciences, Director, GA Small Ruminant  
Research and Extension Center, College  
of Agriculture, Family Sciences and  
Technology, Fort Valley State University,  
Fort Valley, GA

Elizabeth Kramer, Public Service Assistant – Agricultural & Applied Economics Department, College of Agricultural and Environmental Sciences, University of Georgia, Athens, GA

Matt Kulinski, Director, Farmers Markets Division, Georgia Department of Agriculture, Atlanta, GA

Curt Lacy, Extension Economist – Livestock, College of Agricultural and Environmental Sciences, University of Georgia, Tifton, GA

Jerrald Larson, Extension Agent – Emanuel, Burke, Jefferson Counties, Fort Valley State University, Swainsboro, GA

Mark Latimore, Professor – Agronomy, Assist. V.P. for Land Grant Affairs (Interim) and Extension Administrator, College of Agriculture, Family Sciences and Technology, Fort Valley State University, Fort Valley, GA

Elizabeth Little, Assistant Professor – Organic and Homeowner IPM, Plant Pathology Department, College of Agricultural and Environmental Sciences, University of Georgia, Athens, GA

Alice Rolls, Executive Director, Georgia Organics, Atlanta, GA

Harald Scherm, Associate Dean for Research, Plant Pathology, College of Agricultural and Environmental Sciences, University of Georgia, Athens, GA

Harry Schomberg, Ecologist, USDA Agricultural Research Service, Watkinsville, GA

John Schramski, Assistant Professor – Environmental Engineering, Faculty of Engineering, University of Georgia, Athens, GA

Tommie Shepherd, Agribusiness Economist, Center of Agribusiness and Economic Development, College of Agricultural and Environmental Sciences, University of Georgia, Athens, GA

David Stooksbury, State Climatologist Biological and Agricultural Engineering, College of Agricultural and Environmental Sciences, University of Georgia, Athens, GA

Tom Terrill, Assistant Professor – Animal Science, College of Agriculture, Family Sciences and Technology, Fort Valley State University, Fort Valley, GA

Marc Thomas, Extension Specialist – Ag Marketing, Director of County Operations Fort Valley State University Cooperative Extension, Fort Valley, GA

Relinda Walker, Farmer, Walker Farms, Newington, GA

## Appendix B

### Needs identified during the planning process and examples of existing resources available to meet those needs.\*

#### General needs

Quantify water quantity needs and impacts for sustainable agriculture systems	
STATE	<ul style="list-style-type: none"> <li>UGA CAES researchers working on water issues and could be part of new focus</li> </ul>
MOUNTAIN	
PIEDMONT	<ul style="list-style-type: none"> <li>Horticulture work on drip and water efficiency in high tunnels/greenhouses</li> </ul>
COASTAL PLAIN	<ul style="list-style-type: none"> <li>Stripling Irrigation Research Center (focus on conventional and variable rate irrigation but could develop vegetable systems)</li> </ul>

Quantify water quality impacts of sustainable agriculture systems (includes nutrient use)	
STATE	<ul style="list-style-type: none"> <li>UGA researchers working on water issues and could be part of new focus</li> <li>UGA/UF water and nitrogen footprint calculators under developments</li> </ul>
MOUNTAIN	
PIEDMONT	<ul style="list-style-type: none"> <li>USDA ARS research on grazing systems</li> </ul>
COASTAL PLAIN	<ul style="list-style-type: none"> <li>UGA CAES research on grazing dairies</li> </ul>

Quantify energy use, needs and impacts for sustainable agriculture systems	
STATE	<ul style="list-style-type: none"> <li>UGA researchers</li> </ul>
MOUNTAIN	
PIEDMONT	
COASTAL PLAIN	

Quantify climate change mitigation for sustainable agriculture systems	
STATE	<ul style="list-style-type: none"> <li>UGA/UF Carbon footprint calculators under development</li> </ul>
MOUNTAIN	
PIEDMONT	<ul style="list-style-type: none"> <li>USDA ARS researchers on grazing systems/organic vegetables</li> </ul>
COASTAL PLAIN	

\* Note: We recognize that this list is incomplete and there are other organizations, projects, etc. that may not be listed. The list was generated during the planning process to identify areas where there were few resources.

**Integrate food/agriculture into planning and land use policy**

STATE	<ul style="list-style-type: none"> <li>• UGA College of Environment and Design graduate program and faculty</li> <li>• UGA CAES researchers</li> <li>• Social geography researchers</li> </ul>
MOUNTAIN	
PIEDMONT	<ul style="list-style-type: none"> <li>• Carroll County land use plan and TDR program</li> <li>• Rolling Hills RC&amp;D</li> </ul>
COASTAL PLAIN	

**Case studies of successful sustainable agriculture model**

STATE	<ul style="list-style-type: none"> <li>• UGA CAES/Georgia Organics under development</li> </ul>
MOUNTAIN	
PIEDMONT	
COASTAL PLAIN	

**Growers supply infrastructure**

STATE	<ul style="list-style-type: none"> <li>• Growers joint buying through Georgia Organics</li> </ul>
MOUNTAIN	
PIEDMONT	
COASTAL PLAIN	

**Pricing information**

STATE	<ul style="list-style-type: none"> <li>• USDA ERS Organic Prices</li> <li>• UGA CAES market news and data</li> </ul>
MOUNTAIN	
PIEDMONT	
COASTAL PLAIN	

**Logistics and distribution for regional/local food**

STATE	<ul style="list-style-type: none"> <li>• Destiny Organics</li> <li>• Freshpoint</li> </ul>
MOUNTAIN	
PIEDMONT	<ul style="list-style-type: none"> <li>• Athens Locally Grown web-based model used in other communities also Carroll County growers groups</li> </ul>
COASTAL PLAIN	

Developing markets for regional/local food	
STATE	<ul style="list-style-type: none"> <li>• Georgia Organics Local Food Guide</li> <li>• Georgia Market Maker</li> <li>• Georgia Farm Bureau Certified Farm Markets</li> <li>• Georgia Department of Agriculture Georgia Grown</li> <li>• Local Harvest</li> <li>• Georgia Organics website</li> <li>• Sustainable Agriculture website</li> <li>• Center for Agribusiness and Rural Economic Development feasibility and marketing studies</li> <li>• Farm to School program</li> <li>• Georgia Organics Farmer Liaison — contacts with chef efforts</li> </ul>
MOUNTAIN	<ul style="list-style-type: none"> <li>• County agent led farmers markets</li> <li>• Northeast Georgia growers group</li> </ul>
PIEDMONT	<ul style="list-style-type: none"> <li>• County agent led farmers markets</li> <li>• Carroll County growers groups</li> <li>• Athens Locally Grown web-based model used in other communities also</li> <li>• Macon Roots</li> <li>• Augusta box programs</li> <li>• Pike County growers group</li> <li>• Meat and vegetable CSAs</li> </ul>
COASTAL PLAIN	<ul style="list-style-type: none"> <li>• County agent led farmers markets</li> <li>• Tifton local food group</li> <li>• Coastal Organic Growers</li> <li>• Chef box programs</li> <li>• Farmer meat cooperatives</li> <li>• Farmer cooperative selling to Tattnall County school system</li> <li>• New Leaf Market Cooperative (FL-based)</li> <li>• Macon — S.O.L.E. Cooperative</li> </ul>

## Education needs

Farmer education	
STATE	<ul style="list-style-type: none"> <li>• Sustainable/Organic Production team UGA/FVSU</li> <li>• Georgia Farm Bureau Conference website</li> <li>• Georgia Organics Annual Conference and Field days</li> <li>• SE Fruit &amp; Vegetable Grower Convention</li> <li>• Grazing School — rotated around state (UGA)</li> <li>• Southern Consortium for Small Ruminant Parasite control (FVSU)</li> <li>• GA/FL Dairy Graziers Group</li> <li>• GA Grazinglands Coalition</li> <li>• SARE Farm Tours</li> <li>• Direct Marketing of Livestock Products (UGA/FVSU)</li> <li>• Selling Direct to Retailers (UGA/FVSU)</li> <li>• Georgia Department of Agriculture website</li> <li>• Grower News (Georgia Organics)</li> <li>• Georgia Organics website</li> <li>• Sustainable Agriculture website</li> <li>• Extension bulletins</li> </ul>
MOUNTAIN	
PIEDMONT	<ul style="list-style-type: none"> <li>• Carroll County — Sustainable Agriculture School: Extension/Rolling Hills RC&amp;D/West Georgia Technical College. Includes pasture-based systems</li> <li>• Cherokee County — Organic farming &amp; gardening course: Pugh</li> <li>• Athens/Clarke County — Integrated Organic Agriculture: Jordan</li> <li>• West GA — Profitable Graziers Group, 2 to 3 workshops/year</li> <li>• GA/SC Piedmont Grassland County Council</li> <li>• Franklin County — Small ruminant group</li> <li>• Franklin/Banks County — Master Goat Farmer program (UGA/FVSU)</li> <li>• Upson County — Grazing School (UGA)</li> <li>• Elberton/Jasper/Clarke County — Developing a Local Beef Business (UGA)</li> </ul>
COASTAL PLAIN	<ul style="list-style-type: none"> <li>• Washington County — Small ruminant group</li> <li>• Washington County — Goat-A-Rama</li> </ul>

**New and beginning farmer education**

STATE	<ul style="list-style-type: none"> <li>• Beginning Farmer/Rancher grant by Georgia Organics/FVSU/UGA</li> <li>• Georgia Farm Bureau news</li> </ul>
MOUNTAIN	
PIEDMONT	<ul style="list-style-type: none"> <li>• Floyd/Cherokee/Paulding County — Too much to mow, what do I grow? Farm business planning NW GA</li> </ul>
COASTAL PLAIN	

**K-12 education**

STATE	<ul style="list-style-type: none"> <li>• 4-H</li> <li>• FFA and VoAg Programs</li> <li>• Georgia Organics — Teachers Curriculum</li> <li>• Georgia Organics — VoAg Teacher Curriculum</li> </ul>
MOUNTAIN	
PIEDMONT	
COASTAL PLAIN	

**Undergraduate education**

STATE	<ul style="list-style-type: none"> <li>• UGA — Organic Ag Certificate Program; Local Food Systems Certificate Program; Local Food Challenge — Engineering; sustainable agriculture in many crop production courses</li> <li>• FVSU — Organic production courses; small ruminant program</li> </ul>
MOUNTAIN	
PIEDMONT	
COASTAL PLAIN	

**Graduate education**

STATE	<ul style="list-style-type: none"> <li>• Various grad students on specific grants</li> </ul>
MOUNTAIN	
PIEDMONT	
COASTAL PLAIN	

**Policy maker education**

STATE	<ul style="list-style-type: none"> <li>• Georgia Department of Agriculture</li> <li>• Georgia Farm Bureau</li> <li>• Georgia Organics</li> <li>• Atlanta Local Food Initiative</li> <li>• Food Policy Council</li> <li>• UGA CAES Center for Agribusiness and Economic Development</li> </ul>
MOUNTAIN	
PIEDMONT	
COASTAL PLAIN	

**Legislator education**

STATE	<ul style="list-style-type: none"> <li>• Georgia Organics</li> <li>• Georgia Farm Bureau</li> <li>• Georgia Department of Agriculture</li> </ul>
MOUNTAIN	
PIEDMONT	
COASTAL PLAIN	

**Extension education**

STATE	<ul style="list-style-type: none"> <li>• Sustainable/Organic Production Team (UGA/FVSU)</li> <li>• WIMBA training</li> <li>• Sustainable Agriculture Newsletter</li> </ul>
MOUNTAIN	
PIEDMONT	
COASTAL PLAIN	

**Researcher education**

NO CURRENT RESOURCES IDENTIFIED

**Partnerships with health**

STATE	<ul style="list-style-type: none"> <li>• Farm to School</li> <li>• UGA/FVSU FACS</li> <li>• CDC</li> <li>• Arthur Blank Foundation</li> </ul>
MOUNTAIN	
PIEDMONT	
COASTAL PLAIN	

**Statewide strategic plan**

NO CURRENT RESOURCES IDENTIFIED

**Develop a center/institute to advance sustainable agriculture**

NO CURRENT RESOURCES IDENTIFIED

**Engagement of policy makers and partners**

STATE	<ul style="list-style-type: none"> <li>• UGA/FVSU sustainable agriculture programs</li> <li>• Georgia Department of Agriculture</li> <li>• Georgia Farm Bureau</li> <li>• Georgia Organics</li> <li>• Georgia Fruit &amp; Vegetable Growers Association and other groups</li> </ul>
MOUNTAIN	
PIEDMONT	
COASTAL PLAIN	

**Vegetable production**

**Develop small-scale food production models**

STATE	<ul style="list-style-type: none"> <li>• Organic faculty (UGA/FVSU)</li> <li>• Organic extension agent (UGA/FVSU)</li> <li>• Organic IPM plant pathologist</li> </ul>
MOUNTAIN	
PIEDMONT	<ul style="list-style-type: none"> <li>• Fort Valley — Organic acres</li> <li>• Athens — Organic acres</li> </ul>
COASTAL PLAIN	<ul style="list-style-type: none"> <li>• Tifton — Organic acres</li> <li>• Reidsville — Organic acres</li> <li>• Burke County — Boggs Organic Trials</li> </ul>

**Develop midscale production models**

STATE	<ul style="list-style-type: none"> <li>• Sustainable vegetable specialist (UGA)</li> <li>• Organic IPM plant pathologist (UGA)</li> <li>• Plant breeder (UGA)</li> </ul>
MOUNTAIN	
PIEDMONT	<ul style="list-style-type: none"> <li>• Fort Valley — Organic acres</li> <li>• Athens — Organic acres – research/education centers</li> </ul>
COASTAL PLAIN	<ul style="list-style-type: none"> <li>• Reidsville — Organic acres – research/education centers</li> </ul>

**Technical support for transitioning to organic**

STATE	<ul style="list-style-type: none"> <li>• Georgia Organics Farmer Liaison</li> <li>• County Extension Agents</li> <li>• NRCS Programs</li> </ul>
MOUNTAIN	
PIEDMONT	
COASTAL PLAIN	

## Grazing systems

Develop year-round grazing system for beef	
STATE	<ul style="list-style-type: none"> <li>• Forage Extension Specialist (UGA)</li> </ul>
MOUNTAIN	
PIEDMONT	
COASTAL PLAIN	

Develop year-round grazing system for dairy cows	
STATE	<ul style="list-style-type: none"> <li>• Forage Extension Specialist (UGA)</li> <li>• Agronomist (UGA)</li> </ul>
MOUNTAIN	
PIEDMONT	<ul style="list-style-type: none"> <li>• Berry College breeding program</li> </ul>
COASTAL PLAIN	<ul style="list-style-type: none"> <li>• Colquitt County— On-farm research</li> <li>• Jefferson County — On-farm research</li> </ul>

Develop year-round grazing system for multi-species	
STATE	<ul style="list-style-type: none"> <li>• Animal Scientist (FVSU)</li> <li>• Small ruminant Extension Specialist (FVSU)</li> </ul>
MOUNTAIN	
PIEDMONT	<ul style="list-style-type: none"> <li>• Fort Valley research land</li> </ul>
COASTAL PLAIN	

Models for small scale processors e.g. byproduct handling and markets	
STATE	<ul style="list-style-type: none"> <li>• Center for Agribusiness and Rural Economic Development</li> </ul>
MOUNTAIN	
PIEDMONT	<ul style="list-style-type: none"> <li>• FVSU Abattoir</li> <li>• UGA Meat Science Tech Center</li> <li>• Carroll County — SPLOST and feasibility study for multi-species processing facility</li> </ul>
COASTAL PLAIN	<ul style="list-style-type: none"> <li>• White Oak Pastures processing facility</li> </ul>

Food Hubs

Food Hubs

*The mission of the  
Georgia Sustainable  
Agriculture Consortium  
is to foster the development  
of sustainable agricultural  
systems and local/regional  
food hubs to improve  
rural economies and  
communities.*

Food Hubs

Food Hubs

Food Hubs