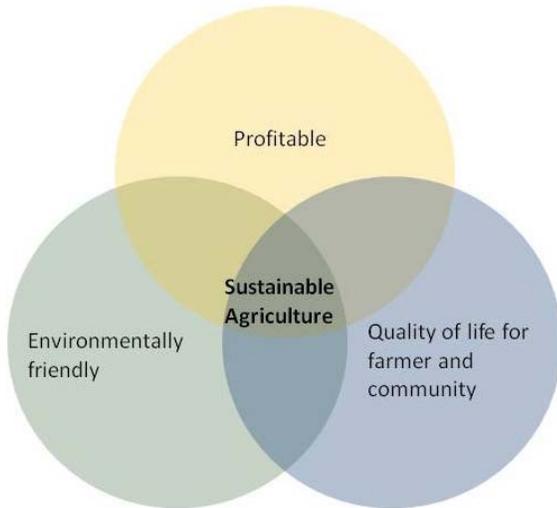


# Sustainable Agriculture

Looking forward for this generation  
and the next...

at **UGA**

**Fall 2009**



**W**hat is sustainable agriculture? I hear that question quite often. In some ways, it is a difficult question to answer, because there is no one way of doing things that can be said to be sustainable for all farms and all places. The core of sustainable agriculture is developing an agricultural system that is profitable, environmentally friendly, and promotes a good quality of life for both the farmers and the community as illustrated by the schematic above. We may see some farms that are profitable, but aren't dealing with environmental impacts well. In this case, they may need techniques to help reduce environmental impacts while staying profitable. Others may find themselves working long hard hours but struggling to make a living. In this case, they may need to look for more efficient ways to produce crops while protecting the environment. In any case, finding approaches that work for your crops, on your land, and in your community while moving towards a truly sustainable agriculture is not easy. We all have a lot to learn from each other. We at the College of Agricultural and Environmental Sciences at UGA, Fort Valley State University and our other partners across the state are working to provide you with the information you need.

Are we helping? Let us know. We would love to hear your questions, comments or topics you would like to see more information on. Email us at [jgaskin@engr.uga.edu](mailto:jgaskin@engr.uga.edu).

Thanks.

Julia Gaskin  
Sustainable Agriculture Coordinator, UGA-CAES

## Vegetable Grower Survey

One of the top needs for information identified by farmers is vegetable varieties that perform well in low input or organic production systems. Dr. George Boyhan, the Sustainable Vegetable Production Specialist at UGA, is beginning a new research focus on evaluating and developing varieties that work in Georgia's soil and in our climate.

So, we need to know: What are your favorite varieties? How do they yield? How do they sell? Do they resist diseases and other pests?

Our new online survey focuses on summer vegetable crops. It's short and won't take long. So please, take a moment, click on this link and tell us about your favorite varieties. Be sure to continue to the bottom of the survey to include information about your farm.

[http://www.surveymonkey.com/s.aspx?sm=j6X3cFjx8RyETTndNhhQQ\\_3d\\_3d](http://www.surveymonkey.com/s.aspx?sm=j6X3cFjx8RyETTndNhhQQ_3d_3d)

This survey will run from now through October 22.

***Don't put it off.***

We will report our results to you in the Winter newsletter and also through the newsletter of our partner, Georgia Organics. Thanks for your input.



## **Research Update**

### ***Food Safety, Small Farms, and Farmers' Markets***

Food safety is an important issue to all of us. Several years ago, at a Georgia SARE Sustainable Agriculture Advisory Committee meeting, stakeholders discussed the need for better information and training for small farms on this topic. Small farms often don't have the resources to put into equipment and certifications that are used by larger growers. They need training on high risk practices and practical solutions for reducing these risks. The University of Georgia, along with Clemson University and Virginia Polytechnic Institute and State University recently received a grant from the USDA National Integrated Food Safety Initiative to help address these needs.

The grant will allow researchers to survey farmers and managers of farmers' markets to determine current knowledge and practices. Information from these surveys will help us develop training materials that can be used by Extension, other educators and farmers' market managers to teach farmers about ways to reduce the risk of foodborne illnesses.

The research component of the grant will evaluate survival of pathogens such as *Salmonella* and *E. coli* in soils amended with organic materials such as composts, manures and green manures. It will also look at survival of viruses and bacteria on commonly used surfaces like gloves, plastic containers or cardboard and look at washing techniques to determine the risk of spreading pathogens. The information developed should help provide practical guidance for small growers and farmers' market managers on best practices.

This information will eventually be presented at venues such as the annual conferences of Georgia Organics and Southern Sustainable Agriculture Working Group (SAWG).

For more information, contact: Dr. Judy Harrison, Family and Consumer Sciences Extension, University of Georgia, [judyh@uga.edu](mailto:judyh@uga.edu).

**Southern SARE** has issued a call for proposals for Producer Grants and On-Farm Research Grants. Deadline to submit a proposal is **October 15**. See full call for proposals and instructions for online submission at: <http://www.southernsare.uga.edu/callpage.htm>

## **Grower's Corner**

### ***Marketing Eggs from the Backyard Flock***

*Notes from Dr. Casey Ritz,  
Extension Poultry Scientist*

For many people, having a backyard egg laying flock is enjoyable simply from the satisfaction of raising a few birds and providing a few eggs for the table. Others look to a



Photo by Stephanie Schupska

backyard flock as a source of income from selling eggs.

While most individuals do not eat fresh eggs every day, a laying hen will produce an egg nearly every day, often producing more than the family can reasonably consume. If you want to sell your excess eggs, a few factors need to be considered.

Eggs sold at the farm for direct-to-consumer marketing typically are not produced or sold under a license nor are the eggs inspected and therefore fall under the "buyer beware" category. This is not to say that the farm-fresh eggs are bad or less wholesome, it's that they might not have gone through the same cleaning and inspection process as those found within retail markets.

In Georgia, you can sell 30 dozen eggs a week to a household consumer directly from your farm without obtaining a Food Sales Establishment License. Farm sold eggs must be candled by a licensed candler and follow labeling, transporting, and storing/display requirements.



In order to sell eggs through a farmers' market or flea market, one must first apply for and obtain a license from the Georgia Department of Agriculture and must follow posted "local operating rules" for the market. The eggs must also have been candled by someone who is officially licensed as an egg candler as provided by the Georgia Department of Agriculture. Egg candling training can be obtained from the Georgia Department of Agriculture. Contact the district office nearest you to schedule a training opportunity.

Eggs cannot be sold to or from any store that sells to the public unless the eggs and the facility from which they were processed meet state and federal inspection standards and the seller has a Georgia Department of Agriculture permit to do so. Roadside markets located on state or federal highways that cater to transient rather than neighborhood trade also fall under this inspection requirement.

With the many people who enjoy and appreciate the taste of farm-fresh eggs, people with backyard egg operations may find ample opportunities to market their eggs for fun and profit, when done so within the appropriate guidelines and regulations to ensure consumer safety and product wholesomeness.

Information regarding the State of Georgia laws and supporting regulations regarding eggs and poultry processing can be found at the Georgia Department of Agriculture website:

[http://agr.georgia.gov/00/article/0,2086,38902732\\_0\\_40971469,00.html](http://agr.georgia.gov/00/article/0,2086,38902732_0_40971469,00.html)

The list of district offices is at:

[http://agr.georgia.gov/00/article/0,2086,38902732\\_0\\_40972745,00.html](http://agr.georgia.gov/00/article/0,2086,38902732_0_40972745,00.html)

A handbook about shell eggs, candling and grading criteria is available on the United States Department of Agriculture (USDA) Agricultural Marketing Service (AMS) website:

<http://www.ams.usda.gov/AMSV1.0/ams.fetchTemplateData.do?template=TemplateA&navID=CommodityAreas&leftNav=CommodityAreas&page=PYHomePage&description=Poultry%20and%20Eggs&acct=poultry>

## ***Compost for Sustainable Vegetable Production***

***Notes from Dr. George Boyhan,  
Extension Vegetable Specialist***

Compost is the product of aerobic (requires oxygen) digestion of formerly living material to the point where the original parent material can no longer be identified. Compost can be an important part of sustainable and organic production. This black amorphous material can dramatically improve soil quality with better water and nutrient holding capacity, improved soil structure, and ultimately as a source of plant nutrients. Improperly made compost, however, can cause serious problems. It is critically important that compost be completely mature before using especially if it is used near the time of planting.



**Windrow composting with specialized equipment that regularly mixes the compost. Photo by George Boyhan.**

In certified organic production, compost is so important that the rules specify how it should be made including the process conditions. These rules specify that the initial material should have a carbon:nitrogen ratio of 25:1 to 40:1. Rules further require that the material reach a temperature of 131-170° F for an extended period of time (see [NOP rules](#) for complete details).



The process of composting begins with the starting materials often referred to as feedstocks. These materials will have a range of carbon:nitrogen ratios and are blended to achieve the desired ratio (25:1-40:1) to begin the process. Grass clippings, kitchen scraps (don't use bones, meat or grease), animal manures, and cotton gin trash will have low carbon:nitrogen ratios (<20:1) and are known as 'green' materials. Leaf litter, woody debris, pine needles, and wheat straw will have high carbon:nitrogen ratios (>80:1) and are known as 'brown' materials. For homeowners and small growers mixing materials in a ratio of 60-80% 'brown' material and 20-30% 'green' material should result in a good mix for composting. It is important that feedstocks that originated from pastures not have herbicides such as picloram (Grazon) applied since they survive the composting process and will cause plant injury.

In addition to the carbon:nitrogen ratios, the moisture and particle size can be important considerations. The moisture content should be between 50 and 60% and the particle size should be less than ½ inch. Once these materials are mixed together the composting process begins. In active composting (regular mixing) the process takes 3-4 months and with passive composting (no mixing) it can take one to two years.

In active composting, the process begins with a high rate of composting which lasts from 10-20 days with relatively high temperatures. This is followed by a period of stabilization, which lasts from 10-30 additional days when temperatures are lower. This is followed by curing, which requires 30-60+ days for the breakdown of phyto-toxins such as ammonia and fatty acids. Once the curing process has completed the compost is considered mature.

It is very important, particularly with active composting, that the compost be tested for maturity. A stable compost, but one that has not been cured, can cause plant damage. This may not be a problem where compost is applied on a field or bed that will not be immediately planted, but when a field or bed is to be planted immediately after or before compost application serious problems can arise if the compost has not been cured. Generally, germination tests using the compost can give an indication of maturity.

Seed of cress, wheat, or rye are often used in these germination tests. If you are buying compost, your vendor should be able to supply you with documents about the feedstocks, compost process, and maturity. I have seen on several occasions where immature compost has caused problems in crop germination and growth. Usually by the time it is evident in the field it is too late to remedy in a timely fashion.

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## ***Crop Residue Suppresses Weeds***

***By Ronnie Barentine,  
Pulaski County Extension Coordinator***

Conservation tillage helps farmers become more sustainable in that it saves them time and fuel, conserves water, builds soil quality, and prevents soil erosion. The widespread adoption of the practice is evidence that farmers like the benefits.

Another component of sustainable ag production is reducing pesticide use. This is difficult with the heavy weed pressure we have in Georgia. For this reason, many farmers have used Roundup (glyphosate) tolerant crops for weed control. They also use the technology because it's about the only choice available. It's hard to find good conventional varieties anymore.



**Planting in heavy rye residue. Photo by Stephen Norris**

The technology worked well for many years, but now there is a major problem with the system. Just take a short ride through the countryside and you will see the problem first hand. It's not hard to see glyphosate resistant palmer amaranth pigweed



towering above the cotton crop in many fields. No doubt this problem is becoming a major challenge in crop production. But Pulaski County farmers are doing a very good job of controlling pigweed in conservation tillage systems. Pulaski County farmer, Barry Martin, has some of the most weed free cotton fields in the county. When asked about his secret, he kicks up a layer of mulch from between his cotton rows and replies "this stuff right here." He is referring to thirteen years of residue buildup on the soil surface as a result of using cover crops. By planting rye as a cover crop each fall, and not harrowing or bottom plowing his land since 1996, he has built up a thick mulch layer that is working to suppress pigweed. It's the same technique used to control weeds in the home landscape, only on a larger scale.



Crop residue accumulation on soil surface. Photo by Ronnie Barentine

One UGA weed scientist that is working hard to address the resistant pigweed problem is Dr. Stanley Culpepper. When asked about the problem recently he said, "To me the key to sustaining conservation tillage acres and hopefully increasing conservation tillage in those areas that have quit recently are a great cover crop and a sound herbicide program." In his research, the highest level of cover crop residue generally provided the greatest level of pigweed suppression.

From my years of working with Barry, I can bear witness that he has a sound program. To get the highest level of cover crop residue he starts out by

planting 70 pounds of rye in early November. Compared to other small grains, rye produces the most biomass and residue. Planting early allows the rye to grow to its maximum height and potential by spring. He kills the rye three weeks ahead of cotton planting in the spring to ensure no pigweed emerges before planting, which is critical. As Pulaski farmer Harold Dunaway says, "You can't ever let'em come up."

Amazingly this year, due to rain delays, the cover crop and residue stopped pigweed emergence for seven weeks from the time he killed the rye cover to the planting of his cotton.

At planting he applies pre-emergent herbicides, which are watered in. He sprays glyphosate over the top after cotton emergence, and then makes timely hooded and directed sprays to control the weed for the rest of the season. This practice is proving very successful. It could work very well with conventional varieties too.

Conservation tillage is playing a major role in farm sustainability. The key to making it work is having a good cover crop and letting the residue build up over time. The benefits are many. But no doubt they are more important now than ever in this battle with pigweed. Now is the time to start planning for a great cover crop next year. Let's get the word out so that we can continue this important sustainable practice.

[www.SustainAgGa.org](http://www.SustainAgGa.org)  
is your source for UGA research & extension information, educational events around the state, and archived newsletters from the UGA-CAES sustainable agriculture program