

# Sustainable Agriculture

Looking forward for this generation  
and the next...

at **UGA**



## Summer 2012

Did you realize that this year is the 150th Anniversary of the Morrill Act? What in the world is the Morrill Act you say? It is the piece of legislation that established the land-grant university system in the U.S. In each state, the federal government helped establish institutions of higher learning through a grant of federal lands. These institutions were to provide a practical education that would have direct relevance in their daily lives to a wide variety of people. This was so important that President Lincoln signed the initial piece of legislation in 1862 – the middle of the Civil War.

Think of this. On July 2, 1862, in the midst of the Peninsular Campaign where there were 34,000 casualties, Congress and President Lincoln thought it important enough to create mechanism to support higher learning and to ensure that learning reached as many people as possible.

Cooperative Extension here at UGA and at Fort Valley State University is a legacy of that foresight. Our mission is to bring you science-based information that hopefully will make a difference in your life.

This newsletter is one way we try to fulfill that mission. Below you will find information on yellow-margined leaf beetles. These pests created

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### Upcoming Events

*July 16:* Jackson Lowe Vegetable Farm Tour  
*July 27-29:* Florida Small Farms and Alternative Enterprises Conference  
*August 14:* Small Farm Tax and Labor Work shop  
*August 17:* Clark & Sons Farm Tour  
*September 18-20:* 6th National Small Farms Conference  
*October 16-18:* Sunbelt Ag Expo

Find more information on these events  
at  
[www.SustainaAgGa.org](http://www.SustainaAgGa.org)

Also find basic principles of sustainable agriculture, Extension bulletins, research publications as well as archived copies of this newsletter at the above website.

problems on many farms this spring. Hopefully, this information will help you protect crops next year. Also our cool, wet spring has led to some growers having problems with late blight in tomatoes. The information here and the Plant Diagnostic Laboratory helps farmers identify and manage this disease. To help our cattle producers, we have some new information on consumer preferences and ideas about using solar power for watering.

We are here for you, and your support has been critical in keeping us here during this era of decreasing budgets. Let us know how we are doing. I always welcome your ideas and comments.

## Grower's Corner

### **Yellowmargined Leaf Beetle,**

*Microtheca ochroloma* Stål

(Order Coleoptera, Family Chrysomelidae)

#### **T**arget plantings and damage:

Brassicas are the primary hosts, with the beetle preferring plants with thin leaves (e.g., turnips, radish, arugula, mustards) over those with thick leaves (e.g., cabbage, broccoli, collards). Adults and larvae damage mostly leaves, chewing holes in the leaf margins and interiors. Leaf damage can be extensive. However, when foliage is depleted, larvae can move down to the ground to feed on exposed tubers of turnips and radishes.



*Larval damage on leaf*



*Extensive leaf damage by Y.M. Leaf Beetle*

**Larvae:** Larvae tend to be brownish-grey to charcoal, are slug-like in appearance, but have three distinct pairs of legs and have hairs on the body. The insect passes through three larval stages (called "instars"), and are most easily detected in the later 2nd and 3rd instars when they are larger and cause significant damage.



*YM Leaf Beetle Larvae*

#### **Life Stage Descriptions and Biology:**

**Eggs:** Eggs are bright orange and cigar-shaped, and are deposited on the foliage individually or in small clusters. The eggs resemble those of lady beetles, but whereas lady beetles tend to place their eggs in masses with the eggs closely placed together and standing on end, yellowmargined leaf beetles commonly place their eggs individually, or in loose clusters with eggs rather haphazardly placed.

**Pupae:** At the end of the 3rd larval instar, the larva spins a loose, usually brownish, cocoon on the plant and pupates within. Adults emerge from the cocoons about 7-9 days after the pupa is formed, typically remaining within the cocoon for about two days after becoming an adult.

**Adults:** Adults are 4-6 mm long (males typically being somewhat smaller than females), and are dark bronze to black. The common name of the beetle derives from the color along the edge of the hard wing covers (termed “elytra”) on the abdomen of the beetle. The margins are typically yellow, but also may be brown or clay red (as in the image). The length of the elytra is also striated with longitudinal rows of punctures, with four rows on each elytral side.



*YM Leaf Beetle Adult*

Beetles are active during the cooler portions of the year in Georgia, typically from late September until late May. During the warm months, they are believed to be on wild Crucifers, possibly in a state of aestivation, or summer dormancy. Both adults and larvae feed on plants, with adult feeding before the appearance of larvae. When initial feeding damage is observed, close attention should be given to the crop for the presence of adults. Initial damage is frequently highly localized within a field or garden. Early detection and management of this pest should help prevent spread.

#### **Organic Management:**

**Natural Enemies:** Although there are some predators (such as the predatory stink bugs *Stiretrus anchorago* and *Podisus maculiventris*) that attack larvae and adults of the beetle, when beetles occur in high numbers they can overwhelm biological control agents.

**Cultural Practices:** Use of straw mulch is not recommended where the beetles have occurred historically, as this can increase beetle abundance and damage.

Row covers can prevent additional beetles from getting on the plants after colonization begins.

The use of trap crops has not been explored, but may provide a management option. The beetles appear to have a marked preference: turnips> mustards>radish>collards>cabbage. Turnips being highly preferred, they could potentially be used as a trap crop for other brassicas, drawing the beetles away from leafy crops to be destroyed mechanically or through use of treatments.

**Therapeutic Tools:** Oil or insecticidal soap applied to the larvae may reduce their activity, but will have limited effect. Oils and soaps will have little or no effect on the adult insects.

Other options include neem products, pyrethrins, and spinosad. Most of the treatment options, with the exceptions of pyrethrum and spinosad, will have much better success against larvae than against adults; and generally, the smaller the larvae, the more easily they can be controlled. Research indicated that spinosad and pyrethrum can provide good control of larvae and adults, with the spinosad being somewhat more effective. These products should be applied in the late evening if possible to give them time to dry before morning. Although they are derived from natural sources, spinosad and pyrethrum are broad spectrum insecticides and can harm native bee populations. Whereas spinosad and pyrethrum are effective on adults and larvae, neem has little activity on adults, but rather functions as a growth regulator disrupting development of larvae.

*John R. Ruberson, L. Paul Guillebeau,  
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Julia Gaskin: College of Agriculture &  
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*For research references, see this fact sheet at  
[sustainagGA.org/Resources/IPM](http://sustainagGA.org/Resources/IPM)*

*Photos by John R. Ruberson, University of Georgia*

## ***Unusual Weather Linked to Late Blight Outbreak on Tomatoes in Georgia***

**E**arly in June, Fayette County ANR extension agent Kimberly Jackson observed the symptoms and signs of late blight on a homeowner tomato plant. The UGA plant disease clinic in Athens confirmed the disease by identifying the pathogen, *Phytophthora infestans*.

Late blight on tomato in Georgia is a sporadic disease and it has been several years since last confirmed. Previous reports have usually been confined to the mountains where the environment tends to be more conducive for this disease. However, the extended cool, wet weather in June set up the potential for a more widespread outbreak, and at least two other reports of the disease were confirmed in the clinic. One of the reports was a commercial grower in the piedmont.

Late blight is a “water mold” and spreads rapidly in mild, wet weather where it can kill entire plants in a few days. The disease will often cease to spread in hot, dry weather. The symptoms of late blight are somewhat unique compared to other foliar tomato diseases such as early blight or bacterial spot. Instead of discrete leaf spots, the leaves look “blighted” with dark, limp, irregular shaped blotches, often starting from the edge. Dark brown lesions also appear on the petioles, stems, and fruit. (see image below of sample received in the clinic). When conditions are humid, white sporulation can be observed on the undersides of the leaves and on stem lesions.



*Tomatoes infected with late blight*

Unlike other tomato foliar pathogens, the late blight pathogen does not survive on dead plant debris and may not readily survive from year to year in Georgia, although the ability to survive has yet to be determined. The source of the disease may have been transplants, so using clean transplants is important. However, in one case the grower used home grown transplants which may indicate other sources for infection.

Growers who suspect they have the disease should send a sample for confirmation to the UGA disease clinic through their county extension agent. Chemical treatments are only effective at preventing the disease and infected plants should be destroyed to contain the spread of the pathogen. For organic growers, OMRI-approved coppers are the most effective product to use for disease prevention. Other preventative measures include keeping plants as dry as possible through water management: avoiding or reducing the use of overhead irrigation, spacing, and staking.

We are interested in tracking any additional outbreaks and would appreciate reports of potential late blight. Again, samples can be submitted to our lab through county extension offices.

*For more info and photos:*

[http://www.longislandhort.cornell.edu/vegpath/photos/lateblight\\_tomato.htm](http://www.longislandhort.cornell.edu/vegpath/photos/lateblight_tomato.htm)

*Dr. Elizabeth Little  
Department of Plant Pathology  
University of Georgia*

## **Extension**

### ***Using Solar Power to Make Cattle Production Sustainable Predictions***

One of the challenges for cattle producers, particularly those using rotational grazing systems, is supplying water. This often requires pumps to keep enough water available for the cows. Using solar power may help farmers by reducing costs and increasing flexibility as to where pumps can be installed. UGA Cooperative Extension has been exploring this possibility recently.

Working with local farmers in Irwin County, UGA County Extension Agents in Irwin and Ben Hill Counties along with Dr. Gary L. Hawkins, UGA Biological and Agricultural Engineering, and Charlene Lankford, USDA-NRCS installed a solar powered system used to pump water for cattle. This system was installed to provide water to cattle that are rotated between three different pastures. The current form of pumping water to the cattle consisted of using a gasoline-based generator to power a submersed pump that filled a pressurized tank. The gasoline-based system required the farmer to spend precious time each day to fill the 150 gallon tank in addition to buying 10 gallons of fuel weekly.

The replacement pumping system consists of three-185 watt solar panels and a submersible pump and control panel. The pressurized tank is still used and is connected to the pump control panel. When the cattle draws water from troughs around the three pastures, water is replaced from the pressurized tank until a low pressure set-point is reached. At that point the control panel sends Direct Current (DC) power to the pump to replace the used water. When the upper limit pressure is reached, the control panel stops the power flow to the pump and stops the water flow.

So you might be wondering how much power is stored for the night since the pump uses solar power? Surprisingly, this system doesn't have to save up any power. A full pressurized tank will provide water for the cattle at night if needed. If when the sun comes up in the morning the tank pressure is below the set-point, the control panel sends power to the pump and the tank is refilled.

This type of pumping system is not always the best option for providing water for cattle. However, for the situation on this farm, the water well was located a distance from the powerline that would have cost the landowner more than the cost of the pumping system itself.

For more information on this project please call Dr. Hawkins at 229-391-2511 or the County Extension Agents in Irwin or Ben Hill Counties or NRCS in Ben Hill County.

*Dr. Gary Hawkins  
Biological and Agricultural Engineering  
University of Georgia*

## **Research**

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### ***So What Do Southeastern Beef Consumers Want?***

There is considerable interest in locally-produced beef; both from a producer and a consumer perspective. Producers are unsure of several things such as what is considered "local", what attributes do consumers view as most important, and is a regionally-grown product (think food-hub) as good as locally-grown? Consumers have several concerns about the food they eat and often find it difficult to source locally-raised beef.



A recent research project completed by the Agricultural & Applied Economics Department at UGA surveyed consumers in surrounding states about their attitudes concerning these and other questions. A couple of the more interesting findings are presented here.

## What do Consumers View as Important?

When asked about what they viewed as important, respondents placed production system labels at the top of the list (Fig.1) with more than half indicating that production system labels such as naturally-raised, organic, and grass-fed to important or extremely important.

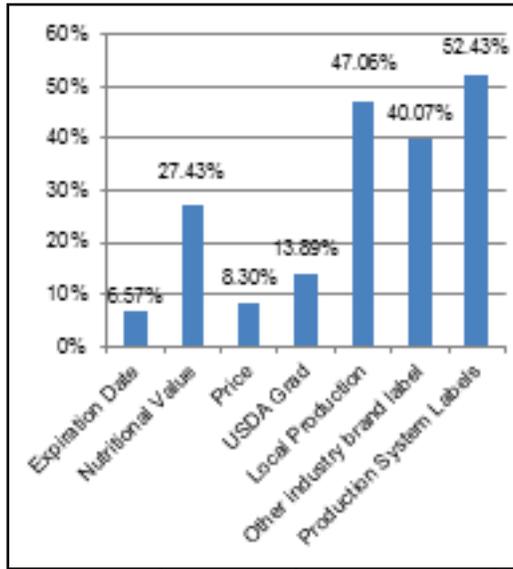


Figure 1. Southeastern Beef Consumers Attitudes About What They View As Important

Following a close second was Local Production at 47 percent with Other industry brand labels such as Certified Angus Beef (CAB®) coming in third at about 40 percent.

In terms of production systems, a statistically equivalent percentage of survey respondents (approximately 40 percent) indicated that they would be willing to pay a premium for either naturally-raised or grass-fed beef. A statistically smaller percentage (roughly one-third) said they were willing to pay a premium for organically-raised beef. The amount of the premium they were willing to pay for any of the production systems was not determined.

While other parts of the survey are still being analyzed, a couple of things are clear at this juncture. First, a majority of Southeastern consumers view the type of production system as important or extremely important.

Secondly, more of them are interested in naturally-raised or grass-fed beef than organically-raised.

The results of this survey should be encouraging and helpful to beef producers in the region attempting to direct-market beef.

For more information about this project, please contact Dr. Curt Lacy in the Department of Agricultural & Applied Economics at [clacy@uga.edu](mailto:clacy@uga.edu).

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