The University of Georgia
Cooperative Extension
College of Agricultural and Environmental Sciences

# Georgia Cotton

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**Pigweed up and running before planting (*Culpepper*)?** Palmer amaranth has emerged and is growing rapidly in many fields across the state. It is essential that growers control this pest prior to or at planting. Obviously, if the pigweed population is not resistant to Roundup then Roundup would be an excellent choice, as would tillage. In areas where glyphosate-resistant Palmer amaranth is present and tillage is not an option, control can be more challenging. Growers must consider several factors such as 1) Palmer size at time of application, 2) application water volume, 3) spray tips, and 4) herbicide mixtures. All of these factors play a crucial role in controlling this pest.

Research on controlling glyphosate-resistant Palmer amaranth during 2008 noted some interesting points. Paraquat (Gramoxone, others) plus crop oil can be used to consistently control emerged Palmer amaranth when it is 2 inches or less. Once Palmer reaches 4 inches it becomes more challenging to control and, often, paraquat alone will not provide adequate control (Table 1). Clarity and 2,4-D mixed with paraquat often improve control but the plantback restrictions with these materials will likely prohibit their use for the rest of 2009. The most effective burndown options during 2008 included mixtures of paraquat plus diuron (Direx, others) and crop oil. Paraquat plus diuron and crop oil can be applied preemergence before cotton emergences or it can be applied 15 to 45 days prior to planting (I really don't understand why diuron has a 15 day plantback restriction, but this restriction is directly from the label). Rates of diuron must be adjusted for varying soil types to avoid cotton injury on lighter soils. For maximum control, growers must apply this herbicide mixture using an adequate spray volume (around 15 GPA would be very effective) with appropriate spray tips.

**Table 1. Palmer amaranth response to paraquat (Gramoxone, others) burndown applications for cotton[1,2].**

| Herbicide options | Control of 4 to 6 inch Palmer (%) | Control of 8 to 12 inch Palmer (%) |
|---|---|---|
| Paraquat 3 L at 1.33 pt/A | 59 d | 30 d |
| Paraquat 3 L at 2.67 pt/A | 68 c | 36 d |
| Paraquat 3 L at 1.33 pt/A + 2,4-D 4 L at 1 pt/A | 70 c | 52 c |
| Paraquat 3 L at 1.33 pt /A + Clarity at 8 oz/A | 87 b | 76 b |
| Paraquat 3 L at 1.33 pt /A + Diuron 4 L at 1.8 pt/A | 94 ab | 73 b |
| Paraquat 3 L at 2.67 pt/A + Diuron 4 L at 1.8 pt/A | 100 a | 96 a |

[1]Crop oil included with all herbicide applications. Clarity and 2,4-D have significant restrictions between application time and planting, see label or Georgia Pest Control Handbook. Also, diuron rate various by soil type thus one should follow label restrictions.
[2]Percent control provided was taken 35 days after treatment. Values followed by the same letter within a column are not different.

**Cotton Gin Trilogy (*Changying "Charlie" Li, Andy Knowlton, Scott Brown*).** The Micro Gin at The University of Georgia Tifton Campus provides a great opportunity for researchers and extension specialists to gin cotton samples from a relative large research plot and to evaluate new cotton varieties or various treatments in a quick manner. Additionally, the UGA Micro Gin was designed in a similar manner as a commercial gin with both seed cotton cleaning and lint cleaning procedures except in a smaller scale (one foot wide in machine parts). With this similar design, is the ginning performance of the UGA Micro Gin the same as or close to the commercial gin with regard to the fiber quality and ginning turnout rate? To answer this question, a study was conducted by UGA Cotton Team members in 2008 to compare three types of gins: the UGA Micro Gin, a laboratory gin (Continental Eagle 10 saw laboratory gin), and a commercial gin.

Cotton was grown in Colquitt County in Georgia and harvested in October, 2008. Five cotton varieties, i.e., ST 4554, PHY 375, PHY 480, ST 5327, and DPL 555, were used for the ginning turnout portion of the study. Three cotton varieties, PHY 480, DPL 555, and FM 1735, were used for fiber quality comparison. Five replicates were used for each cotton variety. In order to compare the performance of the three gins, cotton samples were collected in the field from the picker as the cotton was unloaded into the module builder and the same cotton samples from the same field were ginned across all three gins. All samples ginned at the UGA Micro Gin are processed using a set standard operating procedure. The fiber samples were then sent to the USDA Classing Office for testing. The samples were evaluated using standard HVI equipment as well as human classers. Five fiber quality parameters were selected for the purpose of comparison: staple length, micronaire, strength, leaf grade, and uniformity. For ginning turnout

comparison, since there was only one module for each variety from the commercial gin, no statistical analysis was made for the turnout rate of the commercial gin. For fiber quality comparison, t-test was performed to test the "equal means" of cotton fiber quality parameters between the UGA Micro Gin vs. commercial gin, and the UGA Micro Gin vs. laboratory gin, respectively.

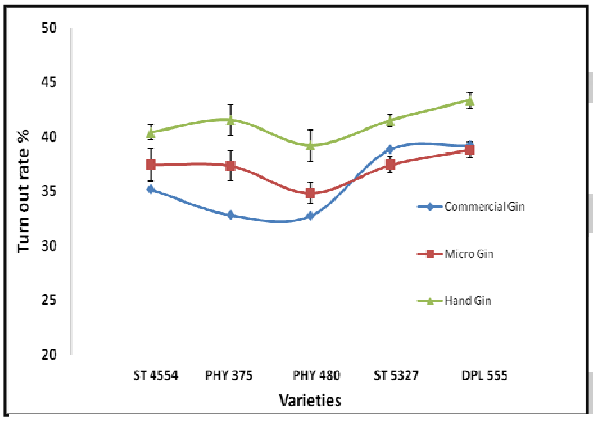


**Fig.1**. Turnout rate comparison of three gins

**Ginning turnout rate**: As shown in Figure 1, ginning turnout rate of the laboratory gin was consistently higher than that of the other two gins across 5 varieties. This is because the lab gin does not have seed cotton cleaning and lint cleaning procedures, so more trash ends up going into the final lint product, which contributes to the higher turnout rate. The performance of the UGA Micro Gin is much closer to the commercial gin regarding the turnout rate. For three out of the five varieties, the UGA Micro Gin had slightly higher turnout rates, while the commercial gin had slightly higher turnout rates than the UGA Micro Gin for the remaining two varieties.

**Fiber quality**: As indicated in Table 1, most of cotton fiber quality values are the same from the UGA Micro Gin and the laboratory gin except for the leaf grade. Leaf grade from the lab gin was much worse than that of the UGA Micro Gin, because no seed cotton cleaning or lint cleaning was performed during ginning of lab gin. The UGA Micro Gin performs very closely to the lab gin in terms of the damage to the cotton fiber in four other parameters (staple, micronaire, strength, uniformity). The significant differences were observed between the UGA Micro Gin and the commercial gin in three fiber quality indices: staple, strength, and uniformity. These three lint fiber quality parameters (staple, strength, and uniformity) from UGA Micro Gin was consistently better than that from the commercial gin, which suggests that the UGA Micro Gin is less aggressive than commercial gin with regard to fiber damage. However, no significant difference was observed in "micronaire" among the three gins. For leaf grade, the UGA Micro Gin and the commercial gin are very close with two varieties (DPL 555 and FM 1735) different and one (PHY 480) without difference.

Table 1. Performance comparison of three gins on the cotton fiber quality using the t-test

| | | Staple | Micronaire | Strength | Leaf grade | Uniformity |
|---|---|---|---|---|---|---|
| DPL 555 | M vs. C | * | n.s. | * | * | * |
| | M vs. H | n.s. | n.s. | n.s. | * | n.s. |
| PHY 480 | M vs. C | * | n.s. | * | n.s. | * |
| | M vs. H | n.s. | n.s. | n.s. | * | n.s. |
| FM 1735 | M vs. C | * | n.s. | * | * | * |
| | M vs. H | n.s. | n.s. | n.s. | * | n.s. |

M: UGA Micro Gin; C: Commercial Gin; H: Hand (lab) gin;
* indicate significant difference at $P \leq 0.05$ level; n.s. indicate no significant difference between two treatments.

**Take home message**: As far as ginning turnout rate is concerned, the UGA Micro Gin is pretty much the same as the commercial gin, both of which are significantly different from the

laboratory gin. Among five fiber quality parameters, the UGA Micro Gin agreed with a commercial gin in two while differed in three. The difference was less evident between the UGA Micro Gin and the lab gin with 4 in agreement. It seemed that the UGA Micro Gin consistently created less damage to the fiber as opposed to the commercial gin selected in this study. Although this study showed differences between a commercial gin and the UGA Micro Gin in three quality indices, it should be noted that differences between these two gins were narrower than those between a lab gin and commercial gin. In addition, this study only chose one commercial gin as a comparison, which did not provide a good representation. More than one commercial gin should be selected for comparison and better control of sampling methods should be made in the future study.

**Thrips Management and Foliar Sprays (*Roberts*):** Thrips are predictable insect pests of cotton and most cotton is treated with a preventive systemic insecticide at planting for thrips control. Preventive treatments will provide acceptable thrips control in many fields, however some will need a supplemental treatment with a foliar insecticide such as Orthene, Bidrin, or Dimethoate. Treatment for thrips is rarely necessary after plants have 5 true leaves and are growing vigorously. The threshold for thrips is when 2-3 thrips per plant are counted; especially when immature (wingless) thrips are observed.

Cotton seedlings are most vulnerable to thrips injury during early stages of development (1-2 leaf), especially when cool temperatures or other stress factors slow seedling development. As seedlings develop they become more tolerant to feeding and once they attain the 5 leaf stage and are growing rapidly, supplemental treatment with a foliar insecticide rarely provides an economic return. Automatic applications for thrips should be avoided. Addition of a thrips insecticide with glyphosate at the 5 leaf stage will rarely provide an economic return and may increase the risk of other pests such as spider mites and aphids.

When scouting for thrips, look closely for wingless or immature thrips. The presence of immature thrips suggests that the preventive insecticide is no longer providing control. Thrips eggs hatch in about 3-4 days and immature thrips will feed for about 6-7 days and then pupate in the soil. The threshold for thrips is 2-3 per plant. When observing seedlings for thrips injury, pay close attention to newly expanding leaves. Malformed, crinkled leaves are indicative of thrips injury. Excessive thrips injury will stunt plant growth and delay maturity. Severe infestations of thrips may actually reduce stands.

**Cotton Scout School Tifton, June 8, 2009 (*Roberts*):** Cotton insect scouting schools are annually held at various locations in Georgia. These programs offer general information on cotton insects and scouting procedures and will serve as a review for experienced scouts and producers and as an introduction to cotton insect monitoring for new scouts. The annual Cotton Scout School in Tifton will be held on June 8, 2009 at the UGA Tifton Campus Conference Center. Additional information for the Tifton Cotton Scout School and others will be forthcoming in future newsletters.

**Cotton Research and Extension Report:** The 2008 Cotton Research and Extension Report has been posted on the UGA Cotton website, http://ugacotton.com. The publication includes summaries of various cotton research and extension trials.

**East Georgia Extension Cotton Agronomist:** Dr. Jared Whitaker recently joined the University of Georgia and will serve as an Extension Agronomist for cotton and soybeans. His office is located in Statesboro. Please welcome Jared.

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*Your local County Extension Agent is a source of more information on these subjects.*

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