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

Georgia Cotton WEED UPDATE

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How important are Staple, Reflex and Valor to your farming operation? (*Culpepper*)
Certainly by now, cotton growers are well aware of glyphosate-resistant Palmer amaranth and the impact it is having on Georgia's cotton industry. Surviving the battle against this pest will be a challenge until new technology can be commercialized (at least 2014). Until that time, growers will have to explore many tactics including tillage, cover crops, and rotating herbicide chemistry. Early season herbicides that are critical for the cotton grower include Staple, Dual Magnum and similar products, Reflex, and Valor. Resistance to Dual type products have not been observed so far but resistance to Staple (an ALS inhibitor) and Valor/Reflex (PPO inhibitors) can occur very rapidly.

ALS inhibitors are used essentially in every agronomic crop produced in the state. Several of the more commonly used ALS inhibitors include Staple, Envoke, Cadre, Pursuit, Classic, Accent, Steadfast, Stout, Resolve, Harmony GT, Harmony SG, Harmony Extra, and Osprey. For the typical grower, Staple and/or Envoke applied in cotton and then rotated with Cadre in peanut has caused a large number of populations of Palmer amaranth to develop resistance to these herbicides. Continued over-dependence on these herbicides will eliminate the effectiveness of these products in Georgia, at least in fields with resistant Palmer amaranth (every field???). In fact, we currently have at least one population of Palmer amaranth that is resistant to glyphosate and the ALS inhibitors, thus making this pest impossible to control with any over-the-top herbicide in Roundup Ready cotton. It is essential that growers make intelligent decisions on the use of ALS inhibitors to preserve the usefulness of this chemistry. For example, we would recommend ***no more than two applications of any ALS-inhibiting herbicide during summer agronomic crops over a two-year time period.***

Additionally, many growers have been told that if they have ALS-resistant Palmer amaranth that can not be controlled by topical applications of Staple then they should still use Staple preemergence. Although Staple preemergence will likely be more effective than the postemergence application, I wonder why one would apply Staple in a field with resistance as it will only promote a larger resistance issue, especially when other effective options exist (Table 1).

Table 1. ALS-resistant Palmer amaranth response to preemergence herbicides. Colquitt County, 2007.

Preemergence Herbicide Option	Percent Control 19 d after application
Prowl + Reflex	95 a
Prowl + Diuron	96 a
Prowl + Cotoran	95 a
Prowl + Staple	85 b
Diuron + Reflex	99 a
Prowl H20 = 2.1 pt/A; Reflex = 1 pt/A; Diuron = 1 qt/A; Cotoran = 1 qt/A; Staple LX = 1.7 oz/A.	

PPO inhibitors will be critical in managing glyphosate-resistant Palmer amaranth. Several PPO inhibiting herbicides exist, but the residual control from Valor and Reflex are critical to cotton production. Similar to the ALS chemistry, resistance to these herbicides can occur and has already occurred with pigweed species in the Midwest. In cotton fields infested with glyphosate- and ALS-resistant Palmer amaranth, these herbicides may be the only hope for harvesting a crop. Thus, it is essential these herbicides are protected by each grower. A cotton grower could potentially use Valor for burndown, Reflex preemergence, and then Valor again at layby. Although this would likely provide excellent Palmer control …..for a year, maybe two…..Palmer amaranth resistance to these herbicides would occur and *CLEARLY* cotton production would not be possible in fields with Palmer amaranth resistant to glyphosate, ALS inhibitors, and the PPO herbicides Reflex and Valor. Similar to our recommendations with ALS inhibitors, we think it is critical for growers to make ***no more than two applications of these PPO inhibitors during summer agronomic crops over a two-year time period.*** For more information about protecting the PPO herbicides, visit the following slide at on the UGA Weed Science web-site: http://www.cropsoil.uga.edu/weedsci/slides/PAC-08/index.html

Special thanks are in order to Drs. Alan York and Eric Prostko for their input with this article.

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