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

Georgia Cotton

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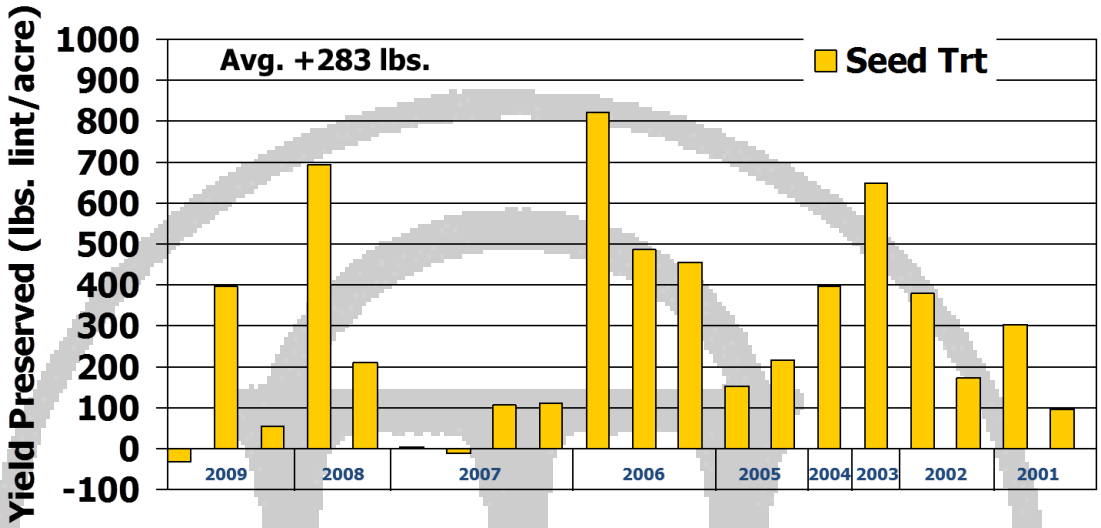
Preventive At-Plant Insecticides for Thrips Management (*Roberts*)

Thrips are the most consistent and predictable insect pest of cotton in Georgia. Cultural practices such as planting date and tillage influence thrips populations, but most if not all cotton planted in Georgia will be infested with early season thrips. Preventive insecticides such as Cruiser (thiamethoxam) and Gaucho (imidacloprid) used at planting provide a consistent yield response and will be used by most growers. The figure below illustrates a summary of yield responses in 20 trials conducted from 2001-2009 comparing commercial seed treatments containing imidacloprid or thiamethoxam to planting untreated seed. The yellow bars represent the difference in yield when a seed treatment was used compared with the untreated. Yields were numerically increased in 18 of 20 trials (90 percent of the time) when a commercial seed treatment was used at planting. The average yield response was 283 lbs. lint/acre in these trials.

Yield Response to Thrips Control

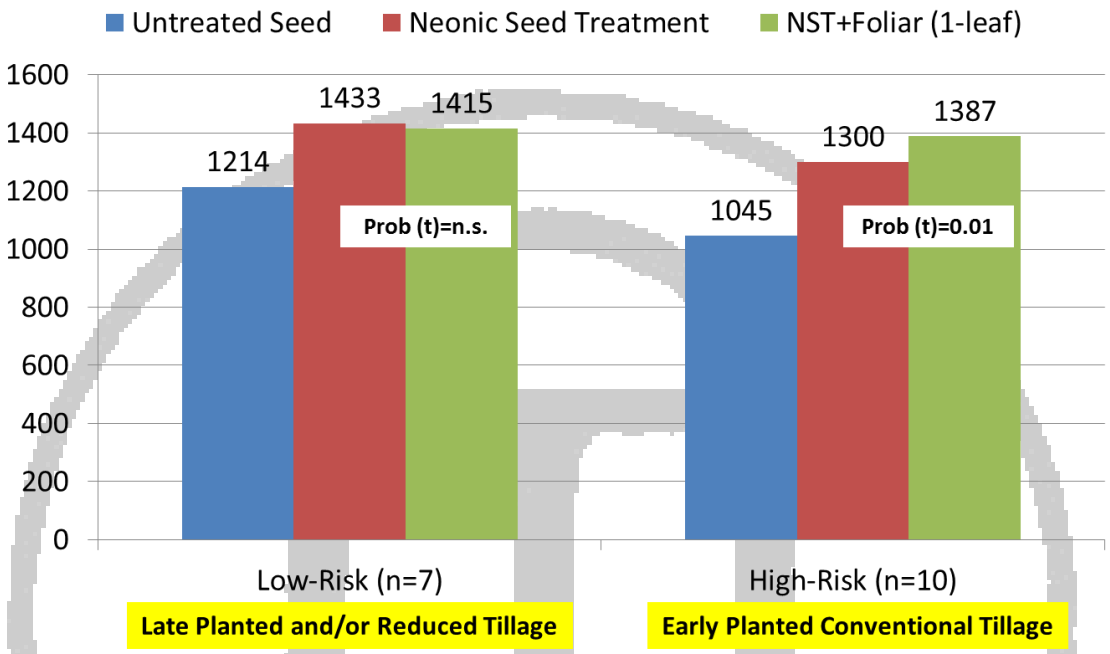
Temik and Seed Treatments, 20 Trials (GA 2001-2009)

(3.5-5.0 lbs/A) (Cruiser/Avicta and Gaucho/Aeris)



Imidacloprid and thiamethoxam are both neonic insecticides which are commercially available as seed treatments. These two insecticides provide similar control and are active on thrips for about three weeks after planting. In field environments where high thrips populations are present or extended residual control is needed, a supplemental foliar insecticide may also be needed.

Thrips infestations are typically higher in early planted cotton and in conventional tillage systems. The chart below illustrates yield response to a supplemental foliar insecticide applied at the 1-leaf stage when a neonic insecticide treatment was used in low risk and high risk thrips environments. There was no yield advantage to applying a foliar insecticide in low risk thrips environments (when cotton was planted after May 10 or in a reduced tillage system). However, in high risk thrips environments (cotton planted prior to May 10 and in a conventional tillage system) yield was significantly increased when a supplemental foliar insecticide was applied at the 1-leaf stage. Yields were numerically increased in 9 of 10 trials (mean=87 lbs.) conducted in high risk thrips environments. Note that in both the low risk and high risk environments there was a 200+ lb. lint/acre increase in yield when using a neonic seed treatment compared with the untreated (219 lbs. in the low thrips risk environment and 255 lbs. in the high thrips risk environment).



We have limited data on Orthene (acephate) in-furrow sprays and seed treatment or hopper box treatments. Orthene treated seed (or hopper box) will provide limited protection for about 5-7 days after emergence. We would anticipate longer residual control when applied as an in-furrow spray since a higher rate would be used. If no at plant systemic insecticide is used at planting, multiple well timed foliar sprays will likely be needed.

Cotton Scout Schools (*Roberts*)

Cotton insect scouting schools are annually held at various locations in Georgia. These programs offer basic 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. Currently scheduled Cotton Scout Schools are below:

Location	City	Date	Time	Contact for additional information
Tifton Campus Conference Center	Tifton GA	June 11, 2012	9:00 am -12:30pm	Debbie Rutland (229) 386-3424
Southeast Research and Education Center	Midville GA	June 19, 2012	9:00 am -12:30pm	Peyton Sapp (706) 554-2119

Financial Incentives Available for Growers Who Use Heavy Rye Cover Crops in Cotton Production in 20 Georgia Counties (*Culpepper*)

Rolling a heavy rye cover crop prior to planting cotton offers numerous potential benefits (Figure 1). Although this system offers these benefits, several challenges (Figure 2) exist and are being addressed through research in an effort to further improve adoption of this system. Without question, this production practice is the most effectively sustainable weed management program when living in a glyphosate-resistant Palmer amaranth world.

Figure 1. Potential Benefits for Georgia Growers

1. Improved pigweed control
2. Protects herbicide chemistry
3. Less labor (compared to tillage)
4. Less wind and water erosion
5. Prevents resistant horseweed
6. Lessons potential for resistant ryegrass
7. Improved moisture conservation
8. Reduce herbicide input costs
9. Potentially higher yields on dryland
10. Less impact from future pesticide regulations
11. Reduces thrips damage

Figure 2. Potential Challenges for GA Growers Still Being Addressed through Research

1. Blowout causing poor seedbed formation and unacceptable cotton stands
2. Incorporate herbicides in the strip when running strip-tillage implement
3. Time to get rye cover crop established
4. Likely need more fertilizer
5. Rubber wheel strip-tillage system needed
6. Grower comfort

RECENT PRESS RELEASE:
Sign-up begins March 26, 2012
Sign-up ends April 18, 2012
USDA-NATURAL RESOURCES CONSERVATION SERVICE (NRCS) EXPANDS PROJECT TO CONTROL PIGWEED ON COTTON CROPS

ATHENS, GA March 16, 2012 - State Conservationist James Tillman, Sr., announced that USDA's Natural Resources Conservation Service (NRCS) in Georgia will provide an additional $1.1 million in financial incentives for an initiative in the currently participating counties of Bibb, Crawford, Dooly, Houston, Macon, Peach, Pulaski, Taylor and Wilcox, to control glyphosate-resistant palmer amaranth, more commonly known as pigweed. This project area has received approval for expansion to include the counties of Appling, Atkinson, Ben Hill, Berrien, Calhoun, Coffee, Colquitt, Cook, Crisp, Irwin, Lanier, Lee, Lowndes, Mitchell, Schley, Sumter, Tift, Telfair, Turner, and Worth. Applications must be received by April 18, 2012 to be considered for funding.

"Just when boll weevil has all but disappeared, pigweed has come on strong. It makes kudzu look like a slow moving redwood tree, having spread from just one county in 2004 to 37 counties today and each plant produces hundreds of thousands of seeds. At present, pigweed costs Georgia producers more than $100 million each year. This strategic investment will help identify ways to combat this costly pest and deliver savings to producers and consumers alike. I appreciate the Administration for identifying this funding and will continue working with the NRCS and with Congressman Bishop on this important issue," said Congressmen Jack Kingston, Chairman of the Agriculture Appropriations Subcommittee.

The project is being funded via the Environmental Quality Incentives Program (EQIP) and is targeted to cotton farmers. Pigweed is particularly troublesome to cotton crops. Congressmen Sanford Bishop, Jr., said, "Georgia is home to some of the world's strongest and most innovative cotton producers. In order to maintain and enhance their yield and increase their profit margins by retarding the spread of pigweed in their fields, it is extremely important that eligible cotton farmers in the designated counties will now have these additional resources, thanks to the NRCS pigweed resistance initiative."

This is a partnership project among the NRCS, the Georgia Cotton Commission and the UGA-Cooperative Extension Service.

Participants will work with NRCS to design a conservation plan and agree to implement several practices that will assist with the control of the glyphosate-resistant pigweed.

General Criteria:

1. Participants must meet the regular EQIP eligibility requirements.
2. Individuals, groups of landowners or non-government organizations are eligible but must have evidence of control or ownership of land.
3. Payment rate will be up to $75.00 per acre for two years.
4. The contracts are for three years with a minimum of 100.0 acres of cropland owned and a maximum of $13,000 per contract.

Interested producers should contact their local USDA Service Center for additional information. More information is available at: www.ga.nrcs.usda.gov<http://www.ga.nrcs.usda.gov>.

http://www.ga.nrcs.usda.gov/news/Pigweed_Project_2012.html

Diuron (Direx, others) Has Multiple Uses in Cotton (*Culpepper*)

Direx is labeled for preplant, preemergence, and postemergence-directed applications in cotton. Diuron is a unique tool for cotton growers as it offers excellent control of small emerged Palmer amaranth and also can provide up to several weeks of residual control. Numerous questions have been asked recently; thus, an attempt to address these questions follows.

1. Burndown applications of Direx can be made 15 to 45 days prior to planting at 0.5 qt/A up to 1.0 qt/A. The rate is limited by soil type (see label). *Currently, a new state label is being developed to reduce plant back intervals.* Mix other burndown herbicides with diuron as needed.
2. Premergence applications of Direx can be made on flat or raised beds at 0.5 qt/A to 1 qt/A with rates based on soil types. Add in other residual herbicides to improve residual control of Palmer amaranth. Add paraquat and crop oil with diuron to improve control of emerged Palmer amaranth.

3. In most situations, growers should use diuron either preplant or preemergence and not both. If growers do decide to make both a preplant and preemergence applications then the total use rates of Direx for both applications should not exceed 0.5 to 1 qt/A depending on soil type (see label).
4. Incorporation of diuron greatly reduces pigweed control.
5. Only cotton can be planted within 6 months into areas treated a preplant or at-plant application of diuron.
6. Once cotton is at least 12 inches in height, Direx at 0.8 to 1.2 qt/A can be precisely directed to the base of the cotton stem. Typically, growers should use 1 qt/A of diuron plus MSMA plus an adjuvant as their layby treatment (see use rates for soils and carryover concerns).
7. Never apply diuron overtop of cotton or sloppily directed to cotton.
8. Hooded applications of diuron plus crop oil plus paraquat are extremely effective as long as growers are certain the paraquat remains under the hood and does not contact the cotton stem or leaves. Injury from paraquat will be from spray drift and not volatility.
9. See label for maximum use rate for the season and carryover restrictions as they vary greatly with soil type and amount of herbicide used.
10. The following table is developed to assist growers in applying the most effective herbicide combination at burndown for the control of emerged Palmer amaranth at varying sizes. Control is greatly influenced by environmental conditions and application procedures.

Diuron mixtures for the control of emerged glyphosate-resistant Palmer amaranth.*	
Herbicide mixture	Max Palmer Height
diuron 1 pt/A + Roundup	1.5 inch
diuron 1.5 pt/A + Roundup	2.5 inch
diuron 2.0 pt/A + Roundup	3.5 inch
diuron 1 pt/A + Gramoxone Inteon 1.5 pt/A + Crop Oil	3 inch
diuron 1.5 pt/A + Gramoxone Inteon 1.5 pt/A + Crop Oil	4 inch
diuron 2.0 pt/A + Gramoxone Inteon 1.5 pt/A + Crop Oil	5 inch
diuron 1 pt/A + Gramoxone Inteon 3 pt/A + Crop Oil	4 inch
diuron 1.5 pt/A + Gramoxone Inteon 3 pt/A + Crop Oil	5.5 inch
diuron 2.0 pt/A + Gramoxone Inteon 3 pt/A + Crop Oil	7 inch
*Control is greatly influenced by environmental conditions and application procedures.	

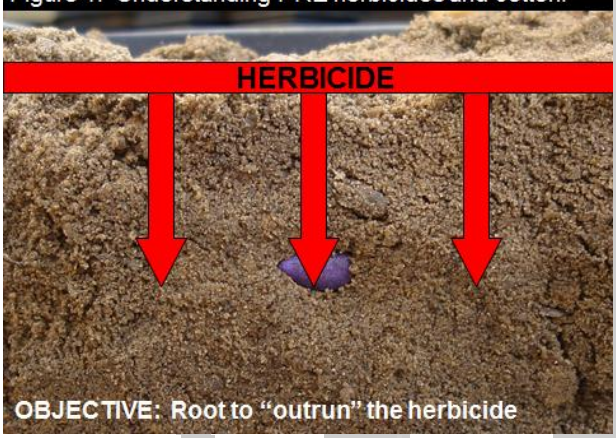
Cultural Practices Greatly Influence Injury from Preemergence Herbicides (*Culpepper*)

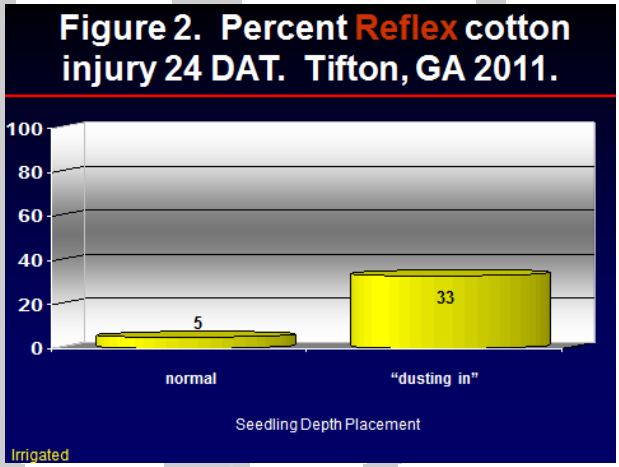
During 2011, numerous injury complaints with preemergence (herbicides applied immediately following planting) herbicides were noted. Cultural practices have been shown to greatly increase or decrease cotton injury from preemergence herbicides.

Ultimately, a grower's objective is to avoid preemergence herbicide injury while obtaining excellent pigweed control. To fulfill this objective, the cotton seed needs to germinate and the root needs to grow in areas with little to no herbicide concentration being present (Figure 1). As the herbicide moves downward in the soil profile, it is critical that the cotton root grows downward at an equal or quicker rate. Several cultural practices can influence cotton injury including the following:

Seedling depth. Many 2011 complaints were in production practices where cotton seed were "dusted in" at a very shallow planting depth. Figure 2 shows research results from 2011 where over 6 times more injury was observed with Reflex when "dusting in" cotton seed as compared to placing seed at recommended cotton depths. This data does not suggest planting cotton seed deeper than recommended!!!

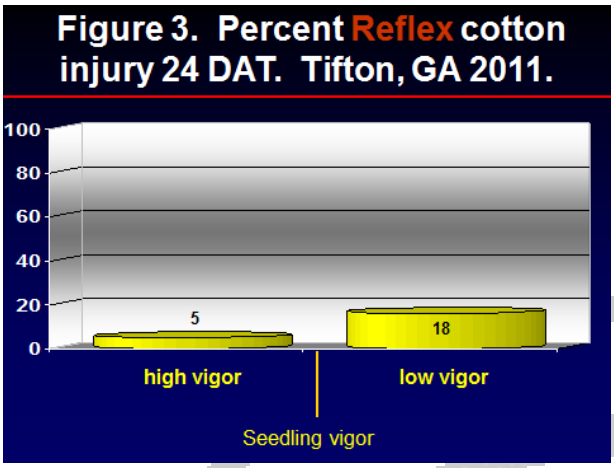
Figure 1. Understanding PRE herbicides and cotton.

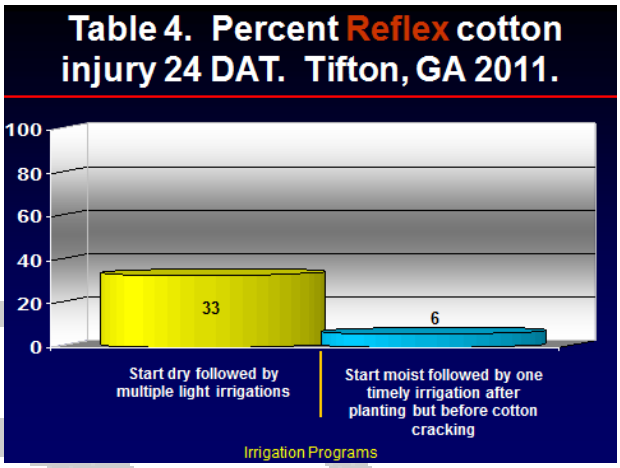




Seedling vigor. The more quickly the seed germinates and the plant root grows then the more likely the root will avoid high concentrations of the herbicide in the soil (Figure 3). Additionally, the more rapidly growing the cotton plant then the more likely the plant can effectively metabolize the herbicide resulting in less injury.

Irrigation. During 2011, the greatest influence on herbicide injury from preemergence herbicides was irrigation scheduling. Growers who plant into a dry soil and then have to irrigate multiple times (immediately after planting through cotton emergence) to get their cotton up are far more likely to have severe herbicide injury as compared to growers who 1) irrigate before planting, 2) plant into moist soil, and 3) then irrigate 24 to 48 hours after planting but also at least 24 hours before cotton cracking (Table 4). Do not irrigate during cotton emergence if at all possible!!





There is no question that since we live in Palmer's world, we must use aggressive preemergence herbicides and injury WILL occur! However during 2012, our research will focus on developing recommendations to assist growers in the most effective approach of using aggressive herbicides to obtain excellent Palmer amaranth control while reducing the potential for cotton injury.

<u>Nematodes Are a Real Threat for 2012</u> (*Kemerait*)

On the 4th of April a sample of field corn was brought to me. The corn plants were extremely young, perhaps three or four developing leaves; they were stunted; chlorotic and the root systems were poorly developed. The grower was concerned that the plants had been injured by a herbicide; with one look at the roots, I had no doubt that a combination of root-knot and stubby-root nematodes had caused significant damage to the seedling corn plants very early in the season. Although damage from nematodes to a corn crop is not unusual, it was unusual (at least for me) to see such damage so early in the season.

What does nematode damage in a corn crop have to do with cotton production? The answer is simple and direct. I believe that the warm winter of 2011-2012 and the very warm spring of 2012 will increase the potential for damage from nematodes on all field crops, to include cotton, corn, soybeans, and peanuts. Warmer soils during the winter and spring may have allowed damaging nematodes, like the southern root-knot nematode that affect cotton over much of Georgia, to remain active during months typically chilled by frigid weather. Although the southern root-knot nematode is able to feed on crops like wheat and common winter-weeds, low soil temperatures during winter and early spring normally suppress growth and development of the nematode. Such has likely not been the case in 2012 and the damage on the corn described above is indicative of what could await cotton in infested fields. To summarize, the potential for damage from plant-parasitic nematodes affecting cotton is greater this year because the nematode populations are active and developing more quickly than in more typical years.

Problems with nematodes affecting cotton are especially challenging this year because of the loss of Temik 15G and the fact that Telone II, our most effective nematicide in cotton production, is likely in short supply again this year. At least three cotton varieties, ST 5458, ST 4288, and PHY 367 have measurable levels of resistance to the southern root-knot nematode. Other

varieties may have some level of tolerance. Seed-treatment nematicides like AERIS Seed-applied system and AVICTA Complete cotton are appropriate for use where populations of nematodes are at low-to-moderate levels, but are not sufficient, at least alone, to protect the crop at more damaging populations. Efforts to improve the benefits of seed-treatment nematicides could include the use of Vydate CLV applied during the 5^{th}-7^{th} true leaf stages of growth and research continues evaluating the new seed treatment Poncho VOTiVO. However, even such combinations may not be enough to adequately protect the crop where larger nematode populations exist. In such cases, growers must use of Telone II. In such situations without use of Telone, the best opportunity will be a) planting a more-resistant variety, b) use of a seed-treatment nematicide, c) use of Vydate C-LV, especially where the reniform nematode is more important than is the southern root-knot nematode, and d) hope that this combination is enough.

2012 US Cotton Prospective Plantings and Georgia Acreage Intentions (*Shurley*)

Farmers across the Cotton Belt say they intend to plant 11% less cotton than last year. Acreage is expected to be down in all but 2 states. This is based on an early March USDA survey. Actual acreage planted may differ and will not be known until the end of June. Actual planting will depend on prices, costs, weather and soil conditions, and other factors

Most regions of the Cotton Belt are expected to be down about 10 to 10½ percent with exception of the West expected to be down 16½ percent. Only a couple of states (South Carolina and Missouri) are expected to remain the same or up from last year. Among the top-5 acreage states, farmers in Texas say they intend to plant 10% less cotton, Georgia 12½% less, North Carolina and Arkansas about 13% less, and Mississippi 8% less.

The acreage reduction in Georgia and the Southeast is in line with pre-report expectations. Given the strength in corn and soybean prices, however, the cotton reduction in several Mid-South states seems light.

Assuming a US average yield of 800 pounds per acre and a typical or average harvesting of 87% of the acres planted, this 2012 planting if realized would project a crop of 19.075 million bales. This would be 3.4 million bales more than the drought-stricken 2011 crop.

US Cotton Acreage
Comparison of 2012 Prospective Plantings to 2011 Actual[1]

	2011 Actual	2012 Intentions	Change
Alabama	460	400	-13.0%
Florida	122	110	-10.0%
Georgia	1,600	1,400	-12.5%
South Carolina	303	340	+12.2%
North Carolina	805	700	-13.0%
Virginia	116	95	-18.1%
TOTAL SOUTHEAST	**3,406**	**3,045**	**-10.6%**
Arkansas	680	590	-13.2%
Louisiana	295	270	-8.5%
Mississippi	630	580	-7.9%
Missouri	375	375	0.0%
Tennessee	495	420	-15.2%
TOTAL MID-SOUTH	**2,475**	**2,235**	**-9.7%**
Kansas	80	55	-31.2%
Oklahoma	415	350	-15.7%
Texas	7,570	6,813	-10.0%
TOTAL SOUTHWEST	**8,065**	**7,218**	**-10.5%**
Arizona	260	204	-21.5%
California	455	400	-12.1%
New Mexico	71	53	-25.8%
TOTAL WEST	**786**	**657**	**-16.5%**
TOTAL US	**14,732**	**13,155**	**-10.7%**

1/ *Prospective Plantings*, USDA, March 30, 2012. Thousand acres.

Looking more closely at planting intentions for Georgia crops, peanuts and grain sorghum are the only row crops where an increase in planting is expected. Cotton acreage is expected to be down 200,000 acres from 2011.

Cotton and peanut acreage, if these planting intentions are realized, would essentially be back to 2010 levels. Peanut acreage will increase at the expense of cotton. Peanut contracts and the season average price are expected to be attractive enough to increase acreage after a 16% decline last year.

Georgia farmers say they intend to plant 200,000 acres less cotton but 95,000 acres more peanuts. According to the survey, corn and soybean acreage is expected to be down slightly.

Georgia, Major Row Crops
Comparison of 2012 Prospective Plantings to 2011 Actual[1]

	2011 Actual	2012 Intentions	Change
Corn	345	340	-1.4%
Cotton	1,600	1,400	-12.5%
Grain Sorghum	50	60	+20.0%
Peanuts	475	570	+20.0%
Soybeans	155	150	-3.2%
Tobacco	11.7	10.0	-14.5%
Wheat	250	270	+8.0

1/ *Prospective Plantings*, USDA, March 30, 2012. Thousand acres.

The report was expected to show Georgia's corn acreage up from last year. If this slightly lower planting is realized, it could be that dry conditions in some areas, high fertilizer cost, and higher cost of irrigating corn relative to cotton and peanuts may have scared some acreage off. Soybean acreage is also expected to be down but soybean prices have trended up and some farmers may still switch acres to soybeans.

Farmers make acreage decisions based on many factors including expected net returns, weather, desirable crop rotations, and crop insurance and risk management. UGA Extension budget estimates provide a useful guide for decision-making and can be adjusted for a particular farm operation. The companion Crop Comparison Tool (CCT) allows producers to compare net returns of alternative crops side-by-side. These decision aids are available from your local County Extension Office or on-line at: http://www.ces.uga.edu/Agriculture/agecon/agecon.html

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

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