The University of Georgia
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College of Agricultural and Environmental Sciences

Georgia Cotton

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Let's not go too overboard with DP 555 B/RR. (*Brown*) The old saying, "Don't put all your eggs in one basket," has long been applied to variety selection. Rightly so. It is rare that a single variety is the best fit across the broad environments and weather possibilities that occur even on a single farm. That stated, the introduction of DP 555 B/RR with its reported yield advantage, desirable technology package, maturity range, and growth habit has some in Georgia contemplating planting it wall-to-wall in 2003. Perhaps a little caution is warranted.

- DP 555 B/RR has been evaluated in public trials for two years. While it has done well in both irrigated and dryland tests, it has been planted only on limited acreage. An "education" is still forthcoming. There will likely be some surprises when it appears on thousands of acres.
- Make no mistake, DP 555 B/RR is a full season variety despite its "mid-full" maturity designation. The "mid" broadens its appeal in areas where earliness has value. Being at least a week later than DP 458 B/RR, DP 555 B/RR is the sort of full season cultivar ideal for the lower coastal plain of Georgia. However, rather than committing all acres to full season cultivars, a mix that includes early varieties is an effective means of spreading harvest.
- Because of its seed size/vigor and maturity, DP 555 B/RR is NOT a good choice at either extreme of the planting window. Its ultra small seed and meager seedling vigor are not compatible with early planting under cool, marginal conditions. Also, conventional wisdom suggests that its full maturity makes it a poor choice late in the planting cycle.
- Its aggressive mid-season growth allows it to produce more total nodes than most varieties. It can get rather tall and thus may be hard to manage in fields which routinely grow rank stalks.

- Is the higher seed and technology cost warranted on dryland acres? The jury is still out.

Spreading risks by genetics, maturity, and planting date still makes sense. In the unpredictable Southeast, spreading risks makes good sense.

Fiber Quality: Which varieties are best? (*Brown*) Producers have been frustrated over the past several seasons because of fiber quality penalties related to high micronaire and/or short staple. This is true in Georgia and across much of the U.S. Cotton Belt. Coincident with these problems has been a monumental shift to transgenic varieties, but is transgenic technology to blame? Probably not, but it is clear that premium fiber quality is currently unavailable in transgenic offerings. Realistically, the heat and drought stress of several of the past seasons challenge the genetics of most varieties, transgenic or conventional.

There are a handful of conventional varieties that consistently produce premium fiber, or at least most often avoid deductions due to high mic, short staple, or low strength. Among these are FM 966, Delta Pearl, DP 491, HS 12, and PSC GA 161. Since transgenic varieties account for over 90 percent of the acreage, conventional cultivars have only a small niche in Georgia. Clearly, the convenience and/or security of Bt and RR technology have tremendous appeal, making technology (Is it BR? Is it RR?) the first issue in variety selection.

What is needed is improvement in fiber quality in varieties that have pest management technology, especially RR. In regard to RR or the next generation Roundup Ready Flex technology, the opportunity is clear: the first seed company to the market with a competitive, high-yielding RR variety (not B/RR) that has reasonable fiber quality will capture a large portion of the market.

If it has to be Roundup Ready….. (Jost) As discussed previously, one of the first things that producers consider in variety selection is technology. Overwhelmingly, Georgia producers are planting the Roundup Ready technology, with greater than 85% of the acres in 2002 being either BR or RR. The Official Variety Trials have repeatedly shown that BR cotton tends to have a greater yield potential than RR varieties. Yet due to the more expensive technology fee that BR carries over RR, many producers allocate their dryland acres to RR and save their irrigated acres for BR cotton. Intuitively, this makes sense because the chances of recovering the cost of that elevated technology fee is greater in irrigated conditions. However, results from a statewide study in 2002 indicate that we may need to rethink this strategy.

In those studies 5 BR varieties were compared with their RR sister line. Also, these trials were all treated uniformly for worms, thus only "variety" performance was evaluated not pest control. Along with yield, fiber quality was determined and a $ value per acre was calculated. The approximate $25/A increase in technology fee for the Bt was subtracted from the crop value estimate for the BR varieties. These tests were conducted under varying production practices allowing for the comparison of the technologies over several yield "environments".

Although only one years data, there are some interesting observations. In the unlikely situation where a producer was to avoid having to spray for worms in non-Bt cotton, the BR cotton still had a greater crop value than RR in fields that yielded greater than 1000 lbs/A. Had only $10/A been spent for the control of worms the benefit of BR cotton would have been realized in a yield environment of 800 lbs/A. If $20/A were required for worm control BR cotton would have been more profitable in a yield environment of only 600 lbs/A.

In a survey conducted by Dr. Phillip Roberts in 2002 it was documented that non-Bt acres were sprayed an average of more than 4 times. Even if only inexpensive pyrethroids are used 4 applications could easily approach $20/A.

Apply your 2,4-D in conservation tillage cotton. (*Culpepper*) Controlling cutleaf eveningprimrose and wild radish has proven difficult and often unsuccessful as these weeds are tolerant to glyphosate (Roundup, others) and paraquat (Boa, Gramoxone Max) applied alone. The addition of a tank mix partner with glyphosate or paraquat or making sequential herbicide applications is recommended for controlling intense populations of these weeds in conservation tillage cotton.

The most consistent and effective herbicide program for Georgia growers, with or without a covercrop, is an application of 2,4-D in February or early March followed by either glyphosate or paraquat near planting.

2,4-D is a very economical and effective herbicide; however, be especially aware of drift to off-target crops as well as spray tank contamination. Amine formulations of 2,4-D are recommended for burndown applications. For those growers who do not choose to make a 2,4-D application in February, many other herbicide choices are available, most of which are usually less effective on primrose.

Clean the 2,4-D residue from your tank. (*Culpepper, York*). If one applies 2,4-D at burndown, spray tank contamination issues must be addressed prior to using the same sprayer in sensitive crops such as emerged cotton.

Sprayer Contamination

Cotton injury can occur from minute residues of 2,4-D (or 2,4-DB) in a sprayer. It is recommended that any sprayer previously used to apply 2,4-D not be used in cotton. If such a sprayer must be used, it should be washed thoroughly before spraying cotton. Special attention should be given to sprayers used to apply glyphosate products or emulsifiable concentrates because these products seem to be particularly effective at pulling 2,4-D residues out of a sprayer.

The following procedure is suggested for washing out sprayers that have been used to apply 2,4-D. Keep in mind this procedure may not totally remove 2,4-D residues. Dispose of rinsates in an approved manner.

1. Remove nozzles, nozzle strainers, and in-line strainers. Using a soft brush, wash the nozzles and strainers with soapy water. Be sure to remove any visible deposits.

2. Before replacing nozzles and strainers, fill sprayer tank with water and add a strong detergent such as 4 pounds of trisodium phosphate per 50 gallons of water or a commercial spray tank cleaner. Agitate for 15 minutes and then flush about one-fourth of the water-detergent mixture through the lines. Replace nozzles and strainers and flush remainder of water-detergent mixture through the nozzles.

3. Spray diesel fuel on the inside surfaces of the tank. Start the sprayer to fill the lines, and let the diesel fuel sit in the lines for several hours, preferably overnight. Then spray out the diesel fuel. **Note:** this step is suggested only if the sprayer has previously been used to apply an ester formulation of 2,4-D.

4. Fill the tank with water and add household ammonia at the rate of 1 quart per 25 gallons of water. Agitate for 15 minutes, spray a few gallons of the mixture through the nozzles, and let the remainder sit in the tank and lines for several hours, preferably overnight. Then spray out the remainder of the ammonia-water mixture.

5. Fill the tank with water and detergent. Agitate for several minutes and spray it out.

6. Fill the tank with fresh water and spray it all through the nozzles.

(Special thanks to Dr. Alan York of NC State University for help in preparation of this section.)

Cotton Nematodes: "We're where you want to be…." *(Bob Kemerait and Cliff Brewer)* Based on the dedication and effort by agents from 67 cotton production counties across Georgia, "Nematode Roundup 2002" was very successful. Between October 2002 and January 2003, nearly 1800 soil samples were submitted to the Nematology Diagnostic Lab in Athens. These samples were from fields that had been arbitrarily chosen with the help of maps provided by the Boll Weevil Eradication Program. Because of this, the survey was not biased by samples collected only from fields known to have had damage from nematodes in the past. Thus it provided a more realistic look at the scope of the nematode problem on cotton here in Georgia.

This survey was not only an opportunity to improve our understanding of the distribution of parasitic nematodes throughout the state, but also allowed agents to provide additional education to growers on the importance of nematodes on all crops in the state. We wish to thank the agents for all of their efforts. Also, the project could not have been successful without assistance from Mr. Jim Wilson and his staff with the Boll Weevil

Eradication Program and through generous financial support from Mr. Tony Weiss and Mr. Stan Childers, Dow AgroSciences.

The data from the 2002 nematode survey is being compiled and summarized now on the importance and management of cotton nematodes in Georgia and will be available later this year in the form of an extension bulletin. Initial results from the survey have been quite eye opening. For example, root-knot nematodes, likely southern root-knot nematodes, were recovered from samples from 61 of 67 counties that participated in the survey, and were probably present in all counties. Perhaps more importantly, root-knot nematodes were found to infest at least 68% of the fields that were sampled. The root-knot nematodes were above economic threshold values (100 per 100 cc soil) in more than 25% of fields that were sampled! The incidence of the root-knot nematode becomes even more serious when one considers samples from specific regions of the state. For example, of the samples collected from the Worth-Tift-Dougherty-Colquitt area, root-knot nematodes were recovered from 80% of the samples. If one considers the Lowndes-Brooks-Lanier-Cook area, root-knot nematodes were recovered from 94% of the samples. In both cases, sandy soils likely make these areas specifically hard-hit by root-knot nematodes. Clearly the root-knot nematode is a very serious problem in the state, and will continue to increase in importance unless growers can increase their crop rotations.

Reniform and Columbia lance nematodes were much more localized in their distribution from the root-knot nematodes, being recovered from only about 5% and 3% of all samples, respectively. However, these low figures can be deceiving based upon the limited distribution of the nematodes. For example, the reniform nematode is most commonly found along the northern edge of the Coastal Plain from Early County to Burke County. It is only found sporadically south of the fall line. In counties like Jefferson, the reniform nematode was recovered from more than 50% of the fields that were sampled. Also, reniform nematodes are more likely than root-knot nematodes to be above threshold levels if they are found at all in a field. Distribution of Columbia lance nematodes is geographically similar to that of the reniform nematode, though perhaps not as extensive. And like the reniform nematode that is found in relatively few fields across the state, in some areas, for example Burke and Jefferson Counties, the number of infested fields rises to more than 30%.

The bottom line to this survey is that parasitic nematodes of cotton are all-too-common throughout production regions of the state. The next phase of our educational efforts to reduce the impact of these parasites will be to provide information on management strategies such as the use of crop rotation and cost-effective nematicide treatments. In the past, the question from many has been, “Can I afford to treat my cotton with a nematicide.” The better question today appears to be, “Can I afford to grow cotton WITHOUT managing the nematodes in the field?”

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