



The University of Georgia
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Georgia Cotton

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HOW MUCH DP 555 BG/RR IS TOO MUCH FOR 2004? (*Brown*) A USDA survey indicated that DP 555 BG/RR was planted on a third of Georgia's 1.3 million acres in 2003. Some believe the actual amount was even higher; regardless, acreage committed to this variety in its introductory year was substantial.

How did it perform in 2003? Generally, it met expectations. It was a slow starter – seedling vigor and early growth were nothing to brag about. Vegetative growth, especially after first bloom, was aggressive. Canopy height management was a challenge and was no doubt made more difficult by the near ideal rainfall and temperatures of last summer. Grower experience and research confirmed the value of early Pix applications on DP 555 BG/RR. As anticipated, yields were good to exceptional. Fiber quality was acceptable but not stellar.

Yield performance last year has increased interest in DP 555 BG/RR. While its yield potential demands that it have a major place on farms in south Georgia, this cultivar has some characteristics that should temper an all-out commitment to it.

(1) DP 555 BG/RR was not universally superior in yield trials in 2003. In The University of Georgia variety trials, DP 555 BG/RR did not routinely dominate as it had in the two previous seasons. In the UGA irrigated, full season trials at Bainbridge, Midville, Tifton, and Plains, lint yields of DP 555 BG/RR were significantly less than the highest yielding commercial cultivar at three of the four sites.

(2) DP 555 BG/RR is a poor choice for early planting. Many growers initiate planting in mid to late April to accommodate large acreage, peanut planting/harvest, etc . Because of its nominal vigor, DP 555 BG/RR is NOT a variety that should be planted when cold, wet conditions or soil compaction/crusting are likely. It lacks pushing power to be consistently strong in marginal conditions in the early days of the planting season.

(3) Conventional wisdom supports planting varieties with different maturities to spread harvest. While historical data reveal that the latter half of October is the driest period of the year – and therefore the most desirable time for cotton harvest – yearly rainfall varies widely. Cotton harvest typically occurs from September through November. Having some cotton ready to pick in September and early October makes sense and is best accomplished with a spread in maturity and planting date. There are several new transgenic offerings that have reasonable yield potential and superior fiber quality. Since DP 555 BG/RR is the most full season variety available, any other variety choice provides an earlier maturing alternative.

(4) Harvest delays and fall rainfall events are probably more detrimental to DP 555 BG/RR than most other varieties. A worst case scenario is having DP 555 BG/RR open and ready for harvest and then suffering the high winds and rains of a tropical storm or the unavailability of a picker. When this variety opens, it needs to be picked IMMEDIATELY!

WHAT ABOUT ST 5599? (*Brown*) ST 5599 BR is the one variety that has challenged yields of DP 555 BG/RR in the past couple of seasons. ST 5599 BR is close to its DP competitor in canopy vigor, maturity, and yield potential. It also has some tolerance to root knot nematodes, a problem that poses a serious threat to Georgia cotton production. Despite these positives, several concerns limit the utility of ST 5599 BR in south Georgia.

Bronze wilt has been observed in ST 5599 BR. In 2002, incidence of up to 20 percent was observed at a dryland site near Tifton. The company reports that the threat of bronze wilt is considerably less in this variety than in one such as ST 132, which is known to be highly susceptible. To minimize problems with bronze wilt, the company outlines a management strategy which includes minimization of stress (planting on good soils with irrigation and with proper fertility) and seeding it in the first half of the planting window.

The conventional parent of ST 5599 BR is ST LA 887. The parent confers the observed nematode tolerance. The conventional parent lost favor because of erratic yield performance and is no longer planted.

Unquestionably, the inherited tolerance to root knot nematodes is a plus, but the available tolerance is limited and not a cure-all when nematode pressure is significant. Fiber quality data from 2003 was positive for ST 5599 BR, as it was for most varieties. Available information indicates that ST 5599 BR has slightly better micronaire and staple than ST 4892 BR.

OTHER VARIETIES TO CONSIDER. (*Jost*) As so adequately stated previously, there are many reasons to commit a significant portion of our south Georgia cotton acreage to DP 555 BG/RR. There are also sound reasons why we should not plant ALL our acreage to the triple nickel. So what other varieties should be planted? While not all-inclusive, below is a list of a few “new” varieties that performed relatively well in last year’s variety trials.

DP449BG/RR – A mid-season variety that DPL has slated to replace DP 451 BG/RR. This variety is definitely not the yield maker that DP 555 BG/RR has gained the reputation of being,

but does appear to be consistent. It came in near the middle of the pack in most trials last year. Fiber quality was “average”.

DP 444 BG/RR – An early-season variety that DPL has slated to replace SG 215 BG/RR. Yields from this variety last year were consistently in the upper-half in the OVTs. It appears to have a high lint turnout and improved fiber quality, especially micronaire. Seed availability in the south will be limited, with more available in the northern areas where earliness is a premium.

ST 5242 BR – A mid-season variety that yielded in the top 10 in all but one of the OVTs last year. However, fiber length was suspect. In addition, as with ST 5599 BR, Bronze Wilt may be an issue.

FM 960 BR – An early season variety from FiberMax that performed quite well in most trials last year, with yields averaging in the top half in the majority of the trials. Fiber quality measurements were average in last years OVTs.

FM 958 LL and FM 966 LL – These are both mid-season varieties that possess the Liberty Link herbicide resistance technology. However, while they are Liberty Link, there are to only be treated with the herbicide Ignite. These varieties were consistent performers in the OVTs last year with the performance edge probably going to FM 958 LL. Quality measurements were average for both varieties. The Liberty Link technology is worth looking at for several reasons. One advantage with this technology is the ability to spray over-the-top with Ignite from emergence to bloom with no issues with crop tolerance. Another reason is that Ignite is an excellent herbicide on morningglory. Finally, this technology allows us to introduce another chemistry into the mix other than glyphosate.

Limitations of 2003 Variety Trial Data. The crop year of 2003 was unique compared to the past several years, and while receiving rains on such a consistent basis with relatively cooler temperatures in 2004 would be welcome, it is probably unlikely. Thus it could be argued that the 2003 trials give us an indication of how varieties perform under somewhat optimum conditions. How these newer varieties will perform under stress is still yet to be determined. Therefore, the advice of “try a little, not a lot” still applies.

MAKING DECISIONS WITH NEMATODE SAMPLE RESULTS (*Kemerait and Brewer*) Pulling soil samples to assess nematode populations is a critical tool for accurate management of nematodes on cotton. Obviously, the timing of the sample, best in the fall of the year or as symptoms appear in the field, is very important. However, it is also very important to be able to interpret the results from the sample that are sent to the agents from the diagnostic lab. Our nematode lab in Athens extracts nematodes from 100 cc of soil and our recommendations are based on the number of parasitic nematodes found in that volume of soil.

Nematode types: Your sample will likely contain a mixture of parasitic (damaging) and saprophytic (non-damaging) nematodes with regards to a cotton sample. Nematodes to be concerned with include southern root-knot, reniform, lance, and sting types. Nematodes that are of little or no consequence include ring, spiral, and lesion nematodes for cotton.

Number of nematodes: Like the old saying goes, “The poison is in the dose,” and this applies to parasitic nematodes as well. Finding a few parasitic nematodes in a *FALL SAMPLE* may not be too critical. The grower should be made aware that they are present in the field and advised to take precautionary steps, like good crop rotation, to keep populations low. Please remember: if you find *ANY* parasitic nematodes early in the season or associated with troubleshooting samples, they are likely to be at least partly responsible for problems and/or symptoms. Small numbers early in the season translate to BIG numbers at the end of the season.

Damage from nematodes and threshold values: Even small numbers of southern root-knot, reniform, lance, and sting nematodes in a field will cause some damage to the crop. However, at low levels, the extent of the damage is not likely to justify the expense of a nematicide for control. The grower should take necessary steps to insure good root growth to minimize any damage from the pests. As the population size increases, so does the damage that is caused to the cotton crop. The point at which the damage from the nematodes is likely to cause enough damage to justify the use of a nematicide is referred to as the “economic threshold”.

Economic threshold values for cotton grown in Georgia were originally developed by Dr. Richard Davis based upon review of literature, discussions with nematologists in other states, and on his experience. Economic threshold values are estimates and not based upon very specific research trials. Our threshold values are listed below.

Southern root-knot nematodes: 100 nematodes per 100 cc of soil
Reniform nematodes: 250 nematodes per 100 cc of soil
Columbia lance nematodes: 80 per 100 cc of soil
Sting nematodes: 1 per 100 cc of soil

As you can see from these values, not all parasitic nematodes affect the cotton plants to the same degree. For example, the larger ecto-parasitic sting and lance nematodes cause more damage at lower levels than do the endo-parasitic root-knot and reniform nematodes.

Using nematode counts for nematicide recommendations: Our economic threshold values serve as a point that we can use to begin making recommendations for the use of nematicides, but that is all. They do not tell you which nematicide to use, or at what rate. *Such specific information, based upon our nematode counts, does not exist.* Still, specialists and agents are asked make recommendations to the growers and this requires judgment calls based on experiences and common sense.

Below are the criteria that I use to make recommendations for the use of nematicides on cotton where the southern root-knot nematode is an issue. *It is important to remember that these are not “hard-and-fast” and may change slightly over time.* Recommendations for lance and reniform nematodes will follow a similar patten taking into account the differences in threshold values for each when compared to 100 per 100 cc soil for root-knot nematodes. Also, you should also recognize that the potential for damage from southern root-knot nematodes is greater in very sandy soils, where damage has been noted in the past, and during droughts and where land is non-irrigated. These factors can cause you to adjust your recommendations.

Levels of Southern Root-knot Nematodes per 100 cc Soil (Fall sample only)

0 nematodes found in sample: Grower should treat for thrips with either 3.5 lb/A Temik 15G, or Cruiser or Gaucho seed treatments.

1-25 southern root-knot nematodes found: Damage from nematodes will likely be very small. Grower may use same treatments for thrips as above; however Temik at 3.5 lb/A will offer limited control of nematodes; Cruiser and Gaucho will not offer any control of nematodes.

26-75 southern root-knot nematodes found in sample: Damage from nematodes will occur, though at a level where use of nematicide-rates of Temik may not be economically justified. At the least, grower should use 3.5 lb/A of Temik. The grower may want to consider increasing the rate up to 5 lb/A in fields where damage has been observed in the past or where soil conditions are very favorable for the root-knot nematode.

76-125 southern root-knot nematodes found in the sample: Sampling for nematodes is not an exact science and as counts approach the economic threshold value, it becomes more important to insure control. In this range, I encourage growers to treat the field with 5-6 lb/A of Temik 15G. As the numbers increase beyond the threshold values, i.e. above 100, growers may also want to consider increasing the Temik rate to 7 lb/A or side-dressing with either Vydate (17 oz/A) or Temik (5 lb/A).

126-300 southern root-knot nematodes found in the sample: At these levels, single rates of Temik are likely inadequate for control of the nematode problem in the field. Growers should consider side-dressing with Temik 15G, 5 lb/A, in addition to an at-plant application of Temik, 5-6 lb/A. Growers may also want to consider an application of Vydate (17 fl oz/A), though results from this treatment are not as consistent in Georgia as are the side-dress with Temik. Also, in fields where nematodes have been a problem in the past, as nematode populations approach 300 per 100 cc of soil, growers may want to consider use of Telone II at 3 gal/A.

300+ southern root-knot nematodes found in sample: As the levels exceed 3X the economic threshold value, use of the fumigant Telone II at 3 gal/A becomes the best option for treatment. Temik (3.5 lb/A), Gaucho, or Cruiser must be used in addition to Telone for thrips control. At extremely high levels, it may pay to side-dress with Temik or Vydate for additional control.

If you have any questions on these figures, please do not hesitate to contact me.

PUT YOUR 2,4-D OUT NOW! (*Culpepper and York*). Hopefully by now, most of us realize that cutleaf eveningprimrose is the most troublesome weed to manage at burndown and this weed requires special consideration for its control. Glyphosate (Roundup and others) or paraquat (Gramoxone Max) applied alone usually do not adequately control this weed (Table 1). Either glyphosate or Gramoxone mixed with 2,4-D (1 pt of a 3.8 to 4 lb material) will provide excellent control of primrose (Table 1) as well as most, if not all, of our other common weeds. Where one has a wheat or rye cover crop, a late winter application of 2,4-D followed by either glyphosate or paraquat applied closer to planting is the best option. This program allows the cover crop to continue growing and producing residue. The same program can be used where

one does not have a cover crop but plans to no-till or strip-till cotton back into last year's crop residue. An alternative is to apply a tank mix of glyphosate plus 2,4-D or paraquat plus 2,4-D now. With this approach, an additional burndown application may be needed at planting to control weeds emerging after the initial application.

Plant back restrictions from 2,4-D labels are quite confusing. Most 2,4-D labels suggest we wait 90 days after application or until the chemical has disappeared before planting cotton. A few 2,4-D products, including both amine and ester formulations, require only 30 days between application and cotton planting. Research in Georgia and North Carolina has shown that an interval of 30 days between 2,4-D application and cotton planting is sufficient to avoid adverse effects on the crop.

Use of amine formulations is strongly encouraged. Growers **SHOULD NOT APPLY ESTER FORMULATIONS OF 2,4-D**, especially in vegetable- and orchard-producing areas, because of the potential for volatilization and damage to susceptible crops. Additionally, several labels allow application of 2,4-D with an airplane, but this is strongly discouraged due to potential liability issues.

Clarity may be applied alone or mixed with glyphosate. While Clarity is almost as effective on primrose as 2,4-D, it is generally not as safe on cotton. Hence, it is important to carefully adhere to the plant-back restrictions on the label (see Table 2). Additionally, there may be concerns with drift to susceptible crops.

If weather conditions or other factors restrict the use of 2,4-D now, there are other options to consider for control of primrose. Valor mixed with glyphosate or Direx mixed with Gramoxone would be alternatives to a 2,4-D program for primrose. These programs likely will not be as effective on pre-bloom primrose but are options to consider. Gramoxone plus Direx has done an exceptional job in controlling primrose that was blooming or seeding out. If selecting the Gramoxone plus Direx option, we would suggest increasing the rate of Direx up to at least 1.6 pt per acre if your soil type allows (see label). See Table 2 for plant back restrictions following Valor, Direx, and other potential burndown herbicides.

Table 1. Primrose response to burndown herbicides. Ratings taken 28 days after treatment.

Glyphosate Mixtures*	Primrose Control	Paraquat Mixtures**	Primrose Control
Glyphosate alone (0.56 to 0.75 lb ae)	60 to 70%	Paraquat alone (0.63 lb ai)	55 to 58%
+ Aim (1 oz of 2 EC)	+ 4 to 10%	+ Resource (4 oz)	+ 0 %
+ Harmony Extra (0.5 oz)	+ 4 to 10%	+ Aim (1 oz of 2 EC)	+ 4 to 10 %
+ Resource (4 oz)	+ 6 to 16%	+ Valor (1 to 2 oz)	+ 13 to 16 %
+ Goal (1 pt)	+ 10 to 15%	+ Direx (1 pint)***	+ 20 to 25 %
+ Valor (1-2 oz)	+ 15 to 20%	+ 2,4-D (1 pint)	+ 42 to 45%
+ Clarity (8 oz)	+ 20 to 30		
+ 2,4-D (1 pint)	+ 30 to 40		

*Results generated from 6 to 16 trials over the past 4 years.

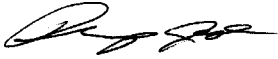
**Results generated from 2 trials over past 2 years.

***If applying Direx with paraquat, suggest increasing rate up to at least 1.6 pt/A if soil type allows; see label.

Table 2. Plant back restrictions for cotton with herbicides applied at burndown.

Burndown Herbicide Choice	Time Interval Before Planting	Special Comments
glyphosate	anytime prior to planting	
glyphosate + 2,4-D or 2,4-D alone	varies by 2,4-D product used; some products have a 30-day restriction	follow restrictions on the label of the particular 2,4-D product used
glyphosate + Clarity	21 days after application AND after accumulation of at least 1 inch of rainfall	closely adhere to these restrictions
glyphosate + Harmony Extra	at least 45 days	
glyphosate + Valor	at least 30 days (check new label as restrictions may change)	normal rainfall needed
glyphosate + pendimethalin	apply within 15 days of planting	
glyphosate + Goal	at least 30 days	need 3 rainfall events of at least 0.25 inch each
paraquat	any time prior to planting	
paraquat + 2,4-D	varies by 2,4-D product used; some products have a 30-day restriction	follow restrictions on the label of the particular 2,4-D product used
paraquat + Direx	15 to 45 days	see label for use rate on your soil
paraquat + Harmony Extra	at least 45 days	
paraquat + Goal	at least 30 days	need 3 rainfall events of at least 0.25 inch each

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