



The University of Georgia
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Georgia Cotton

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Pix and Non-Irrigated Cotton. (*Brown*) In the past several seasons, it has been ill-advised to routinely apply mepiquat chloride (Pix, etc.) on dryland cotton. Drought which began in 1998 has typically limited vegetative growth in non-irrigated cotton. The lack of growth (or the need to do everything to encourage vegetative growth) and the motive to minimize costs have resulted in sparing use of growth regulators in recent years except in irrigated fields.

Not so in 2003! Few irrigation systems have been operated in Georgia cotton this season. Plentiful rain has brought lush growth. Except where cotton is drowned, the crop is off to a roaring start. Some areas, most notably east and north Georgia, are late. Thus, mepiquat chloride should be used in both irrigated and non-irrigated fields for its primary benefits – suppression/moderation of plant size and encouragement of early fruit set.

A standard rate prior to or at first bloom is 8 oz/A. However, numerous fields, because of aggressive growth, may require higher rates, 10 to 16 oz/A, for the initial application with a follow-up treatment if good conditions persist. A large portion of our acreage is planted to DP 555 BG/RR, a variety noted for considerable vegetative growth, especially after first bloom. Growers cannot afford to be late (with timing) or shy (with rate) on this variety. Early results support initiating applications on DP 555 BG/RR 1 to 2 weeks prior to bloom.

Frequent rains have given some frustration about wash-off. Standard mepiquat chloride labels indicate that the product requires a rain-free period of 8 hours and that the addition of surfactant reduces that to about 4 hours.

Early Outlook for 2003 Cotton Prices, LDP, and CCP. (*Shurley*) Prices for 2003 cotton look much improved over last year and the past several years. December futures

are currently in the 59-cent area and poised to rally higher. There is much uncertainty over the potential size and condition of the 2003 US crop in the face of very good world demand and shrinking world stocks. Some of this optimism is offset by increased foreign production for 2003 and a continued sluggish US textile industry– but *nevertheless, the expectation is that higher prices are likely if the US crop comes in less than 17 million bales (USDA’s present forecast is 17.2 million) and if US exports can remain strong despite increased foreign production.*

Should current price levels continue or increase, with higher prices will come less LDP (POP) and CCP for 2003. LDP (Loan Deficiency Payment) is determined from the A-Index (world price). At present, the 2003 crop A-Index is running about 4 cents above December futures or about 63 cents per pound. The “adjustment for grade and US location” is about 13 cents. Subtracting this gives an Adjusted World Price (AWP) of 50 cents or 2 cents below the US average loan rate of 52 cents. *So, at present the LDP projects to be about 2 cents.* Note that if the A-index gets to 65 cents or higher, there would be no LDP. If prices move lower as harvest time approaches, the LDP would be greater.

A-Index (approx. as of 6/26/03)	63.00
Adjustment	-13.00
Adjusted World Price (AWP)	50.00
US Average Loan Rate	52.00
LDP (Loan minus AWP)	2.00

The Counter-Cyclical Payment (CCP), if any, is determined by the formula:

$$CCP = 72.4 - 6.67 - \text{higher of Loan Rate or MYA Price}$$

MYA is the “Marketing Year Average” Price as calculated by USDA. This is a weighted average price. The average price received for each month is weighted by that months marketings as a percentage of the total for the year. Historically, most cotton is marketed during the November-January period and thus prices during this time have the most bearing on the MYA Price. Looking at the current level of December and March futures prices and *if prices remain at these levels and assuming a typical -400 US average basis, a CCP of probably not more than 8-10 cents would be in the offering.* If prices trend higher into 2004, the CCP will be less.

Dec-March Futures (as of 6/26/03)	60.00
Expected Average Basis	-4.00
Est. Avg. Nov-Feb Cash Price	56.00
Estimated CCP	9.73 **

** $CCP = 72.4 - 6.67 - 56.0 = 9.73$

Replacing Fertilizer Nutrients that May Have Leached in June. *(Harris)* Many cotton growing counties received over twice their normal rainfall in June. This raises concern over replacing a number of fertilizer nutrients that may have leached. Should I replace my preplant N at sidedress?, What about potassium? Were these really leaching rains? These are all good questions I will try to answer here.

First, were the storms in June “leaching rains”? Many did come in large amounts in short periods of time. Most places had good soil moisture (both topsoil and subsoil) for a change, which is also conducive to leaching (soil physicists/hydrologists call this “antecedent water content”). Of course, the sandier the soil, the more potential for leaching. Also, some people think that if you have a “runoff” rain, it is not a leaching rain. This is not necessarily true. Finally, with more and more strip-till acreage...strip-till can reduce runoff and increase infiltration, which may actually increase the potential for leaching.

So which nutrients should I look to replace? Nitrogen (N), potassium (K) and sulfur (S) are all relatively mobile in our soils. Unfortunately, they all display similar deficiency symptoms in cotton also, i.e. yellow leaves. Therefore, it may be difficult to visually determine which nutrient you are lacking. Looking at what fertilizers the grower has applied -- and when -- can help. For example, if the grower applied little or no preplant N and has not sidedressed yet (many growers have had troubles getting into wet fields), the problem is probably nitrogen. If no sulfur has been applied at either preplant or sidedress, it may be sulfur. If a grower has done a good job with N and S (preplant and sidedress) but maybe not so well with K, it could be K deficiency.

Since it is easy to “mis-diagnose” N, K and S deficiencies in cotton, the best way to decide what you may want to replace is through plant tissue testing. Sufficiency ranges for these nutrients are available and designed for when taken up to first bloom. After first bloom, a petiole may be better to determine N and K deficiency. However, the sufficiency range for S in petioles has not been determined. Therefore, even after first bloom, a tissue sample would be required to determine S deficiency, preferably by comparing to a “good” sample.

Some other quick thoughts on replacing leached nutrients:

- * Nitrogen is the fertilizer nutrient needed in the largest amounts by cotton and is also the most leachable. Consider increasing your sidedress N rate by 25% to replace lost preplant N. “Re-sidedressing may be warranted but needs to be done before the third week of bloom in order to be effective. Foliar N can be effective anytime during peak bloom (first four weeks) or shortly after.

- * Potassium is not as leachable as N but can leach under extreme conditions in our soils, e.g. heavy rains on deep sands. Additional potash can be applied with sidedress N (easier with granular than liquid) or with foliar applications. It may be easier to rely on foliar applications of K if you develop a problem compared to N.

- * Sulfur is about as leachable as N, but unlike N and K it is not easier to foliar feed. Therefore, S needs to be applied in preplant or sidedress applications. If not, a gypsum application with a high-clearance buggy may be your only chance of recovery.

* Don't forget that boron (B) is also highly mobile in our soils. With more Bt and "stacked" cotton, some growers have gone to applying B in preplant or sidedress applications. Preplant B applications this year are high susceptible to leaching. Sidedressed B is a more preferred soil application method. Of course B foliar feeds very well and may be worth the trip alone if none has been applied or leaching of preplant B is suspected.

Nematodes Chew on Young Cotton. (*Kemerait*) Nematodes are costing cotton growers in Georgia millions of dollars each year. Most everyone who works with the crop is aware of this fact and most also recognize that good crop rotation and judicious use of nematicides are important management tools. What is less clear to many growers is the fact that nematodes are not just someone else's problem. Parasitic nematodes very likely affect most growers to some extent.

From the success of the 2002 Nematode Round Up, presentations at county meetings, and recent articles on cotton nematodes, I may have become a bit too confident in the level of grower awareness on the importance of nematodes. There is no doubt that we better recognize the depth of the problem here in Georgia; however a series of recent phone calls and field visits across the Coastal Plain prove that much work remains to be done.

The common thread in these field visits and phone calls has been that some young cotton is not growing well and is stunted and perhaps chlorotic (pale green to yellow). While there are a number of factors that could lead to such symptoms, plant pathologists typically get called out when fertility, herbicide damage, drought, etc. have been ruled out as the culprit. After all, we usually associate nematode damage with severe root galling and premature cut out later in the season. Thus far in 2003, severe nematode damage that may cripple yield has been observed or reported by agents in Seminole, Wilcox, Pulaski, and Jeff Davis Counties. In four of the five cases, tiny galls were visible on the secondary roots when the young plants were DUG carefully from the soil. When the roots were washed and viewed with a dissecting microscope, silvery egg masses were clearly evident exuding from the galls. In the fifth case, symptoms of Fusarium wilt appeared on young cotton in a field where troubleshooting soil samples identified the presence of reniform and sting nematodes.

So, what is the lesson to be learned here? It is very difficult to manage a current nematode problem effectively without using a nematicide at planting and perhaps following this with a side-dress application. In the cases mentioned above, the growers either chose not to use any nematicide, or used Temik at a low a rate. While use of a side-dress treatment alone may help to some degree, it will not be as beneficial as if treatment had occurred either before or at planting.

The reasons for not using a nematicide probably involved 1) failure to identify the nematode problem in previous seasons by submitting a nematode sample for analysis, 2) a desire to cut production costs, or 3) the decision to invest in some form of treatment other than a nematicide. Without exception, growers who have had early season nematode problems and did not use a nematicide regret this decision; there are several lessons that can be learned from these experiences. From an education standpoint for the

2004 season, all cotton growers should consider the following options for managing nematodes:

1. Growers, especially those on short rotations, should send soil samples collected at the end of the season for nematode analysis. If a field has a problem with nematodes, this is the best time of the year to identify the magnitude of the problem. Of course there is a fee associated with this, but the information is well worth the expense.
2. If a grower suspects that there may be a problem with nematodes, he should accept the expense of treating the problem. The real issue is not what you pay up front, but what you make in profit at the end of the season. It is difficult to understand spending hundreds of dollars on a single bag of seed and then not protecting it once the seed is planted.
3. Some growers may decide not to use a nematicide for fear it will interfere with some other treatment that they are applying at planting. My suggestion is to consider how much impact the control of nematodes may have on yield versus the potential for yield increase from some other lesser-known treatment.

One of the most difficult aspects of our Extension jobs is to have to tell growers that there is little they can do to solve a problem affecting their crop so early in the season. Hopefully the situations mentioned here will help other growers avoid costly mistakes in the future.

“I found galls on the roots! So why didn’t you find nematodes?” (*Kemerait, Brewer, and Davis*) Occasionally I receive phone calls and letters or have conversations with agents and consultants from across Georgia who are extremely frustrated with a few of the results they get back from the samples submitted for nematode analysis. Typically, the conversation goes something like this, “Listen, Bob. I found stunted plants in a field clustered in a typical nematode pattern and found numerous galls on the roots when I DUG the plants up. There was little doubt to me that root-knot nematodes were at least partially responsible for the symptoms and damage. I took soil sample, like you told me, from the affected root zones, I collected roots, AND I shipped them carefully to Athens so as not to kill the nematodes in transit. And do you know what came back in the sample results? Not a single root-knot nematode, or any other parasitic nematode for that matter. What in the world is going on? Are you screwing my samples up, or what?”

I understand the frustration on the part of the grower, agent, and consultant. After going through the effort and care needed to confirm a field diagnosis based upon obvious symptoms (galls on the roots), there is absolute disbelief and even anger when the results from the lab do not support the observations. Agents and consultants do not want to hear 1) soil sampling is not exact, 2) maybe you got this soil from an area where there were no nematodes, or 3) maybe you didn’t handle the sample carefully enough. Likewise, we have a professional staff in Athens, which works hard to provide accurate results. While mistakes can happen in any job, it is unlikely that the lack of “predicted” nematodes in a sample is the result of improper extraction or identification in the lab.

Therefore, assuming that the samples were collected, handled, shipped, extracted, and analyzed correctly, why might soil samples taken from near galled roots come back with few or no root-knot nematodes? There are several possible reasons for this.

1. When soil conditions are very dry, it is often difficult to find free-living root-knot nematodes in the root zone as they have migrated to more hospitable environs, perhaps in the root tissue or to moister soil.
2. Threshold levels of nematodes are determined based upon nematode populations at the END of the season after repeated generations of reproduction during the growing season. Therefore, the presence of nematodes early in the season that are well below the threshold levels could still cause significant damage earlier in the growing season.
3. Finally, early in the season, as on seedlings, the limited populations of nematodes that were present in the root zone will have infected the root and formed galls from which eggs are exuded. However, there is a period of time between the **appearance** of galls and the **presence** of larger quantities of nematodes in the root zone. Therefore, early soil samples will likely not identify a problem with root-knot nematodes even though their presence is undeniable on the roots.

Finally, if any anyone has concern over the interpretation or accuracy of the results from their sample, they should not hesitate to contact Bob Kemerait or Cliff Brewer for further information.

Linex Use at Cotton Layby. (*Culpepper and York*) There have been a number of questions regarding Linex (active ingredient linuron) use in cotton. Lorox (active ingredient linuron) was registered for layby on cotton back in the 80's, but registration on cotton was discontinued. Linex has recently received a supplemental label for use on cotton. One can obtain copies of the label by going to Griffin's web site (www.griffinllc.com) and following the prompts. You will have to go to the supplemental label for Linex in cotton.

Labels for Linex allow directed application of lower rates to cotton that is at least 6 inches tall. However, we suggest cotton be 12 inches prior to application.

The Linex label suggests 1 to 1.5 pt after cotton is at least 6 inches, with the option of two applications. Alternatively, Linex can be applied once at 2 to 3 pints after cotton is at least 20 inches. We would suggest 1.5 pt Linex plus 2 lb ai of MSMA after cotton is at least 12 inches. There are currently no labels to cover tank mixes of Linex plus glyphosate.

We have used a lot of diuron (Direx, others) or Caparol plus MSMA as well as diuron or Caparol plus glyphosate in recent years. How does Linex compare? For most situations, the weed control will likely be similar. Linex POSSIBLY has more activity on grasses when compared to Caparol or diuron. We have had similar results with Caparol + MSMA, Direx + MSMA and Linex plus MSMA in trials conducted for the past two years. Basically, we have had excellent weed control with all three combinations when

applied to decent-sized weeds. Additionally, no injury concerns have been noted when precisely applying to 12 inch or larger cotton.

Any of the three products (Linex, Caparol, diuron) can cause antagonism on grasses when mixed with glyphosate. It is not a common problem but can occur, especially with larger grasses and in less than ideal conditions.

Rotational restrictions do vary with these three products. There are basically no rotational restrictions with Linex. The label notes small grains can be planted 4 months after application. With Caparol, any crop can be planted the following year. Small grains can be planted in the fall after Caparol application although the label specifies the small grains must be used for cover crop only – not for food or feed. The Direx label says to not plant other crops within 1 year of the last application. We would caution one not to use Direx where tobacco or vegetables will be planted the following year.

One can also tank mix a half rate of Direx and a half rate of Linex. This MAY reduce the potential for carryover to crops the following year.

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

What to do about drowned or wet cotton. *(Jost)* Dr. Harris covered the nutrient issues for cotton receiving the more than adequate rainfall. However, there is another factor to consider. There are areas around the state, most notably in the Appling and Jeff Davis county areas, where fields have not had the opportunity to dry out at all this season. Between leaching and bacterial breakdown of nitrogen there is probably not much left in the field, which leads to the chlorosis we have been seeing. Another symptom that has been noted is red stems and stunted growth, something very similar to what we would expect from the LACK of water.

In order for roots and the plant as a whole to function properly oxygen is needed in the soil. In these extremely wet fields water has replaced oxygen. Thus in these fields the roots do not have enough oxygen function and cannot absorb and use the water. This is the reason plants in these extremely wet conditions actually appear to be water stressed.

The answer is obviously not to irrigate! The best solution to this problem is to cultivate where possible. Cultivation will help to incorporate oxygen into the soil and also help to dry the surface out. Applying a side-dress application of nitrogen and the cultivating it in may be the best way to get these plants going again. Foliar fertilization may be an alternative however; it is difficult to apply a significant amount of nitrogen with this method. In addition, some of these fields are so stunted that there may be only 2 or 3 leaves per plant that are in any physiological condition to absorb the application.

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