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College of Agricultural and Environmental Sciences



Georgia Cotton

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IMPLICATIONS OF A PLANTING-SEASON DROUGHT	1
ROOT-GROWTH PROBLEMS	2
MAKE SURE PLANTERS ACCURATELY ADDRESS SEED SIZE	2
ENVOKE HERBICIDE LABELED FOR OVER-THE-TOP APPLICATIONS TO ANY PICKER-TYPE COTTON CULTIVAR	3
SELECT YOUR DUAL HERBICIDE PRODUCT CAREFULLY	3
MANAGING TROPICAL SPIDERWORT IN ROUNDUP READY COTTON	4
GLYPHOSATE PRODUCTS LABELED FOR USE IN ROUNDUP READY COTTON AND OTHER CROPS	6
SEQUENCE HERBICIDE LABELED FOR OVERTOP OR DIRECTED APPLICATIONS IN ROUNDUP READY COTTON	6
EARLY SEASON INSECTS	7
COTTON SCOUT SCHOOLS	7
COTTON NEMATODE SURVEY 2004: MORE BAD NEWS	7

IMPLICATIONS OF A PLANTING-SEASON DROUGHT. (*Brown*) While much of the state had 1.5 to 3 inches of rain this past weekend, March and April 2004 were terribly dry. Prior to this good soaking, subsoil moisture was low to nonexistent.

Combating dry weather is not new to most cotton growers, but stand establishment and weed control are major challenges in such an environment.

As of the first of May, about 20 percent of the expected crop is planted. Perils of planting into dry conditions include (1) putting seed into limited moisture only to have the moisture fall below the germinating seed and developing radicle, (2) planting at excessive depths but achieving erratic emergence because of crusting and/or marginal seedling vigor, (3) “dusting in the seed” – planting into totally dry conditions – but receiving a light shower sufficient for germination but not emergence, and (4) planting into dry conditions with the expectation of rain which does not occur until mid-June.

Moisture conservation is no easy thing, especially when rainfall is severely limited. When no rain falls there is no water to conserve. Every tillage operation further depletes soil water, so the best approach is to keep soil disturbance and tillage to an absolute minimum.

In terms of weed management, early applications of glyphosate in Roundup Ready cotton worked extremely well in 2003. Because of dry weather, expect herbicide performance to decline for species such as Florida pusley, nutsedge, morningglories, bermudagrass, tropical spiderwort, and perhaps pigweed. Also, there has been significant germination of warm season annuals in conservation tillage systems. Residue may shield weeds from burndown and early post treatments, allowing weeds to gain size and become well established...and more difficult to control. When drought conditions persist, reduced rates are often counterproductive – use the full label rate, especially with the species listed above.

ROOT-GROWTH PROBLEMS. (Jost) There have been a few isolated incidences of abnormal root growth in early planted cotton this year. Under good conditions when a cotton seed germinates the radicle will emerge from the seed and grow down into the soil and be relatively “straight” in shape. Certain conditions may cause this radicle to “cork-screw” or grow in an “S” shape.

There are several factors that can cause this abnormal growth to occur. First, is soil temperature. The optimum soil temperature for cotton planting is 65°F. If the soil temperature approaches 50°F there is the potential for chilling injury which may stunt the growth of the root tip and cause problems season long. Between the soil temperatures of 50 and 65°F, certain malformations can occur such as those described above. Another factor that can lead to such root growth is the seed encountering hard-pan or other impenetrable obstacle. Finally, there is the possibility of injury to the seed during acid delinting.



The fields in which this malady has been encountered have been those planted approximately 1 to 2 weeks ago. At this point there does not appear to be a variety or company particularly implicated, as these malformed roots have been observed in multiple varieties from differing companies. Thus the delinting process does not appear to be the culprit. The latest cool snap and large amounts rainfall are most likely the causative factors. In the affected fields, approximately 15 to 20% of the seedlings are exhibiting symptoms.

MAKE SURE PLANTERS ACCURATELY ADDRESS SEED SIZE. (Brown) Much has been said in recent years about small seeded cultivars. There have been a couple of reports this year regarding planter problems with LARGE SEEDED varieties. Some growers have improperly matched air/vacuum with seed size and have unintentionally planted way too few seed per acre.

In these instances, standard air/vacuum pressure has been insufficient to hold larger, denser seed. Adjustments in air pressure can probably solve this issue.

ENVOKE HERBICIDE LABELED FOR OVER-THE-TOP APPLICATIONS TO ANY PICKER-TYPE COTTON CULTIVAR. (*Culpepper*). Envoke can be applied topically to any picker-type cotton variety when the cotton reaches a minimum of 5 true leaves. The labeled use rate for an over-the-top application ranges from 0.1 to 0.15 oz of product per acre. We strongly suggest using only 0.1 oz/A if applying topically. A high quality non-ionic surfactant with a minimum of 80% surface-active agent should be added to the spray solution at 0.25% volume/volume. DO NOT apply Envoke with any other pesticide, adjuvant, or fertilizer.

Envoke is an effective option for the control of bristly starbur, common cocklebur, coffee senna, Florida beggarweed, hemp sesbania, ivyleaf morningglory, pitted morningglory, sicklepod, and volunteer Roundup Ready soybean. Suppression or control (depending on moisture) of nutsedge species will also be observed.

Envoke will not control smallflower morningglory, grasses (do not mix with a postemergence graminicide), tropical spiderwort, Florida pusley, or prickly sida. Suppression of Palmer amaranth, tropic croton, and peanut is often observed.

In 2003, significant cotton injury by Envoke applications was not observed in Georgia but was observed in two other cotton producing states. We suggest you try this product but only on limited acreage until more research and experience can be obtained.

SELECT YOUR DUAL HERBICIDE PRODUCT CAREFULLY. (*Culpepper*). Dual Magnum (*s*-metolachlor) can be applied postemergence over-the-top of cotton between 3 inches in height and 120 days prior to harvest. Additionally, this product may be directed in cotton from 3 inches in height until 80 days prior to harvest. Use rates of Dual Magnum range from 1.0 to 1.3 pt/A broadcast for most of our soils. Recently, several generic metolachlor products have obtained registration for use in cotton as well. Are all of these products the same?????

Below is an article by Dr. Alan York from N. C. State University that he sent out to his agents to address some of the potential issues with these metolachlor products.

I have had several comments and questions concerning generic metolachlor-containing products. Typically, generic products perform similarly to the name brands. The situation may be different with some of the generic metolachlor-containing products.

The herbicide metolachlor is a mixture of equal parts of two isomer pairs, referred to as R and S isomers. Published research has shown that the S-isomer pair is much more herbicidally active than the R-isomer pair when applied on a pound per pound active ingredient basis. One example of such research was a paper given at the 2004 Annual Meeting of the Weed Science Society of America (and available in the proceedings of the meeting). Researchers in Colorado reported the following: "Both greenhouse and field studies have shown that S-metolachlor is 1.6X more active than metolachlor on a gram to gram basis across these 5 different soils and in three

different field locations within Colorado. The residual activity of S-metolachlor was greater than metolachlor when the two formulations were applied at the same rate, and comparable when S-metolachlor was applied at a reduced rate, on a gram for gram active ingredient basis. In summary, metolachlor provided less weed control than S-metolachlor when applied at the same rate."

Dual and Dual II, which were on the market a few years ago, contained the mixed isomers in equal parts. The active ingredient was referred to as "metolachlor". In recent years, Syngenta has been selling Dual Magnum and Dual II Magnum, which are enantiomerically enriched with the S-isomer. The active ingredient in Dual Magnum and Dual II Magnum is referred to as "s-metolachlor", and these products contain 88% S-isomers and 12% R-isomers.

Two other companies are also selling generic metolachlor products including Stalwart, a Sipcam product, and Me-Too-Lachlor, a Drexel product. Both Stalwart and Me-Too-Lachlor contain metolachlor.

The concern arises because the Sipcam and Drexel products contain metolachlor, not s-metolachlor. But, the rates recommended on the labels, in pints or quarts per acre, are the same as on labels of the Syngenta products containing s-metolachlor. With that being the case, it should be obvious that one is applying less of the more active S-isomer pair when applying the Sipcam or Drexel products. And, it should be obvious that one might get less weed control when using the Sipcam or Drexel products.

For further information on this subject, I recommend the following two web sites:

<http://www.weeds.iastate.edu/mgmt/2004/stalwart2.shtml>

<http://www.weeds.iastate.edu/mgmt.qtr00-1/isomers.html>

MANAGING TROPICAL SPIDERWORT IN ROUNDUP READY COTTON. (*Culpepper and Flanders*). Tropical spiderwort has quickly become the most troublesome weed facing Georgia cotton producers. The first step in managing this troublesome weed is early detection. If detected early, control of this pest is possible and economical. However, if the pest gets a "foothold" in cotton fields the pest will likely increase the cost of a herbicide program by at least 33% with late-season control still often being unacceptable. Figure 1 is a seedling tropical spiderwort for identification purposes.

In South Georgia, tropical spiderwort has already emerged. This weed will likely continue to emerge throughout the season and even into and after cotton defoliation.

Burndown: If tropical spiderwort has already emerged when planting, apply Gramoxone plus an adjuvant.

Preemergence: Cotoran applied PRE will provide approximately 70% control for three to four weeks. Remember the bulk of the spiderwort population will emerge after June 1. So, if one is putting Cotoran out in early May and the pest does not emerge until June then the Cotoran would

be of little help for controlling spiderwort. However, we would still suggest the use of Cotoran applied preemergence in fields heavily infested with spiderwort in case a significant emergence occurs in the near future. How about other preemergence products? The only other preemergence herbicide that offers valid assistance in managing this pest would be Command. If one chooses to use Command be sure to use the proper in-furrow insecticide to avoid a crop disaster.



Figure 1. Seedling Tropical Spiderwort

Early Postemergence: Dual Magnum is clearly the backbone of a weed management system when one is trying to control tropical spiderwort. Unfortunately, we can not apply Dual Magnum preemergence to cotton because of the potential for significant crop injury. Dual Magnum can be applied only after cotton is at least 3 inches in height. In research trials, mixtures of Roundup WeatherMax plus Dual Magnum or Sequence (premix of Touchdown plus Dual Magnum) have been extremely effective when applying overtop of 3- to 4-leaf Roundup Ready cotton. Remember, Dual Magnum provides no postemergence weed control but if the Dual Magnum is applied prior to spiderwort emergence and activated by rainfall or irrigation excellent control will be noted for several weeks. Cotoran plus MSMA plus Dual Magnum would be our most effective early-season option however a directed application would be required.

Late-Season Directed applications of MSMA are clearly more effective than those with glyphosate (Roundup products). Research has shown Caparol, Direx (Diuron, others) or Valor mixed with MSMA is an effective mixture for controlling emerged spiderwort less than 3 inches in height while also providing several weeks of residual control. If one chooses to direct

glyphosate at layby then the addition of herbicides such as Aim, Caparol, Direx, or Valor will greatly improve spiderwort control compared to glyphosate alone. Currently it appears that Aim may be the most effective postemergent layby herbicide option in cotton and would be a beneficial tank mix partner anytime the spiderwort is greater than 3 inches in height. Aim does not provide any residual control.

GLYPHOSATE PRODUCTS LABELED FOR USE IN ROUNDUP READY COTTON AND OTHER CROPS. (*Culpepper*). Many questions have arisen regarding the use of glyphosate products in Roundup Ready Cotton. Below is a table developed by Dr. Alan York at N. C. State University to help answer such questions. No significant injury issues have been noted in RR cotton when using labeled glyphosate products with the one exception being ClearOut 41 Plus. Currently we would suggest not applying ClearOut 41 Plus overtop of cotton, directed or hooded applications of ClearOut 41 Plus should be acceptable. See labels of each product prior to using to obtain the correct rate and adjuvant needed.

Labeled uses of glyphosate products in corn, cotton, and soybeans. A.C. York, NCSU, March, 2004.

Brand Name	Burndown	POST application to RR crops			Preharvest			Cotton - Hood
		RR Corn	RR cotton	RR soybean	Corn	Cotton	Soybean	
Buccaneer	Yes	Yes	Yes	Yes	No	Yes	Yes	RR only
Buccaneer Plus	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Clearout 41 Plus	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Credit	Yes	Yes	Yes	Yes	Yes	RR only	RR only	No
Credit Extra	Yes	Yes	Yes	Yes	Yes	RR only	RR only	No
Gly-Flo	Yes	Yes	No	No	No	Yes	Yes	Yes
Gly-4	Yes	Yes	Yes	Yes	No	RR only	Yes	RR only
Gly-4 Plus	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Glyfos	Yes	Yes	Yes	Yes	RR only	Yes	Yes	RR only
Glyfos Xtra	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes
Glyphomax	Yes	Yes	Yes	Yes	Yes	Yes	Yes	RR only
Glyphomax Plus	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Glyphosate 4	Yes	Yes	Yes	Yes	No	Yes	Yes	RR only
Gly Star Original	Yes	Yes	Yes	Yes	RR only	Yes	Yes	RR only
Gly Star 5	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Gly Star Plus	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Honcho	Yes	Yes	No	Yes	Yes	Yes	Yes	Yes
Honcho Plus	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Roundup Original	Yes	Yes	No	Yes	Yes	Yes	Yes	Yes
Roundup OriginalMAX	Yes	Yes	No	Yes	Yes	Yes	Yes	Yes
Roundup WEATHERMAX	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Touchdown	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Touchdown HiTech	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Based upon labels listed on CDMS.net, March, 2004, and an educated person's best interpretation.

SEQUENCE HERBICIDE LABELED FOR OVERTOP OR DIRECTED APPLICATIONS IN ROUNDUP READY COTTON. (*Culpepper*). Sequence, from Syngenta, is a premix of Touchdown (glyphosate) and Dual Magnum. Sequence can be applied topically to Roundup Ready cotton from 3 inch tall cotton up to the 4-leaf stage of cotton development. The use rate is 2.5 pt/A broadcast providing nearly a full labeled rate of glyphosate plus 1 pt/A of Dual Magnum. The

product can also be directed as long as the total use rate for the year does not exceed 3.5 pt/A broadcast.

Sequence should provide similar postemergence weed control as noted with other glyphosate products when applied at an equal use rate of active material. Sequence will also provide residual weed control, if activated, of those weeds that are normally sensitive to Dual Magnum.

Pin-point speckling will occur. Try to avoid applications to “dewy” cotton and when the environment is extremely moist, humid, and hot.

EARLY SEASON INSECTS (*Roberts*) Thrips are predictable early season pests of cotton in Georgia and other areas of the southeast. In most situations failure to control thrips on seedling cotton will result in decreased yield potential. For these reasons, preventive insecticides at planting are recommended. However, all fields (even when a preventive treatment was used) should be scouted for thrips infestations and resulting plant injury. Supplemental foliar insecticide treatments are recommended when thrips number 2-3 per plant, especially if immature (creme colored and wingless) thrips are observed. The presence of immature thrips on seedlings would suggest that the preventive treatment is not providing control. Control of thrips is rarely needed after plants have 5 true leaves and are growing vigorously. During conditions of slow seedling growth, resulting thrips injury on seedlings is greater than similar infestations on rapidly growing seedlings. Typical thrips injury includes crinkling of expanding leaves or even blackening of the terminal bud if populations are high. Failure to control damaging infestations will cause plant stunting, reduced yield potential, and in severe situations loss of apical dominance or stand loss.

We have had a few reports of grasshoppers in reduced tillage fields. Most grasshoppers are immatures which have emerged from egg masses deposited in the soil last fall. The immature stages are much more susceptible to insecticides compared with the adults. Higher rates of insecticides should be used when adults are present. Unfortunately we do not have a threshold number of grasshoppers per unit area. Feeding on cotton seedlings is unpredictable, but economic stand loss is possible due to grasshopper feeding. Seedlings damaged by grasshoppers appear similar to cutworm damage. However, the stem of developing seedlings are often only partially cut by grasshoppers and the plant may remain standing for several days but is weakened. If grasshoppers are suspected, be sure to thoroughly check for cutworms under debris or just below the soil surface.

COTTON SCOUT SCHOOLS (*Roberts*) There are several scout schools which will be held in county extension offices. The locations and dates are as follows.

May 22, 2004 Terrell Co. Extension, Dawson, GA Will Duffie (229) 995-2165

June 14, 2004 Rural Dev. Center, Tifton, GA Phillip Roberts (229) 386-3424

June 15, 2004 Jeff Davis Co. Extension, Hazlehurst, GA Tim Varnedore (912) 375-6648

June 22, 2004 SE GA Br. Expt. Sta., Midville, GA Richard McDaniel, (706) 554-2119

COTTON NEMATODE SURVEY 2004: MORE BAD NEWS (*Kemerait and Brewer*) As an addition to the 2002 Nematode Round Up Survey, agents in a number of counties asked to continue the program in 2003. Agents in participating counties were provided with a map of their area from

the Boll Weevil Eradication program. The agents were then asked to RANDOMLY sample as many fields as they were able, submitting the samples to the University of Georgia's Nematode Assay Lab in Athens. In all, 976 soil samples were collected and submitted, representing roughly an equal number of fields. Although the randomness of the fields (i.e. fields selected without regard to prior knowledge of damage from nematodes) cannot be truly assessed, the results were as troubling as those from 2002.

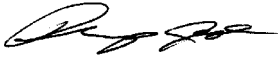
From the 976 samples submitted in the 2003 cotton nematode survey, parasitic nematodes were found in 779, or nearly 80%. More importantly, parasitic nematodes were above threshold values in 34% of the samples. Given that the laboratory reporting system does not recognize sub-threshold combinations of multiple parasitic nematodes, e.g. fields with moderate levels of both reniform and root-knot nematodes, 34% above threshold is probably a conservative estimate. As in all of the previous surveys of this type conducted in Georgia, the root-knot nematode is the parasitic nematode that is most widespread in the state. This was true for Atkinson, Appling, Berrien, Colquitt, Crisp, Decatur, Dougherty, Elbert, Jeff Davis, Laurens, Lee, Mitchell, Screven, Terrell, Tift, Toombs, and Wilcox Counties. Reniform nematodes were more commonly recovered than root-knot nematodes in Sumter, Clay, and Randolph Counties. Reniform nematodes were much less abundant elsewhere in the state. Some counties, such as Crisp and Elbert, had a significant proportion of the samples that contained both root-knot and lance nematodes. The percentage of infested samples and samples above threshold for each participating county is presented in the table below. We appreciate the efforts of the agents who collected these samples.

Results from 2003 County Agent Nematode Survey.

County	No. Samples	No. Infested	% Infested	No. Above Threshold	% Above Threshold
Appling	117	100	85	30	26
Atkinson	8	5	63	2	25
Berrien	25	21	84	7	28
Clay	17	15	88	8	47
Colquitt	2	2	100	2	100
Crisp	148	113	76	32	22
Decatur	87	66	76	36	41
Dougherty	4	4	100	3	75
Elbert	9	7	78	1	11
Jeff Davis	66	52	79	23	35
Laurens	10	10	100	9	90
Lee	2	2	100	2	100
Mitchell	314	267	85	117	37
Randolph	18	15	83	4	22
Screven	23	18	78	12	52
Sumter	5	3	60	3	60
Terrell	48	29	60	17	35
Tift	6	6	100	4	67
Toombs	49	30	61	9	18
Wilcox	18	14	78	4	22

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

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