



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



Georgia Cotton

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Managing Plant-Parasitic Nematodes Affecting Cotton in 2011 (Kemerait)

Losses attributable to plant parasitic nematode affecting cotton are an important and serious problem in many fields across Georgia. Found most often in sandier areas of a field, the southern root-knot nematode causes economic losses by forming galls on the root system leading to damage that affects not only the growth of the roots, but also the uptake of nutrients and moisture. Typical symptoms of damage to a cotton crop from the southern root-knot nematode include galling on the roots, stunting, and foliage with inter-veinal chlorosis. Although the reniform and Columbia lance nematodes do not form galls like the southern root-knot nematode does, these plant parasitic nematodes can also cause severe yield losses and stunting in cotton fields. Rotation with peanuts helps to reduce damage from all nematodes affecting cotton and rotating cotton with corn also helps to reduce populations of the reniform nematodes. Unfortunately, rotation of cotton with soybeans, corn, and many vegetable crops will not reduce the levels of southern root-knot nematodes.

In addition to rotating a field away from cotton and other host-crops, management of southern root-knot nematodes in our cotton fields is best achieved by integrating use of the partially-resistant varieties like PHY 367WRF and ST 5458B2RF with the judicious use of nematicides like Telone II and Temik 15G. In field studies conducted at the University of Georgia, use of PHY 367WRF and ST 5458B2RF not only resulted in lower gall-damage than in non-resistant varieties, but also reduced end-of-season populations of the southern root-knot nematode as compared to plots planted to susceptible varieties. Growers should note that while these two varieties with partial resistance to the southern root-knot nematode can become an important component of an integrated program to manage the southern root-knot nematodes, they will not offer any protection against other types of nematodes, like the reniform, Columbia lance, or sting.

Though production of Temik 15G was reported by Bayer CropScience to end in 2014, recent developments in the manufacture of the active ingredient (aldicarb) in Temik now result in a significant reduction in production of this nematicide in 2011. It is believed that if production resumes in late March, the Temik available in 2011 will be about 40% of what it has been in the past and that only the “gypsum” formulation, not the “corn cob formulation” popular with our growers, will be available.

In the absence of Temik 15G, it is hoped that growers who have resisted adoption of fumigation with Telone II at 3 gal/A will consider doing so now. Certainly there are costs associated with use of Telone II; however no product currently available in cotton production offers the same level of protection against all parasitic nematodes affecting the crop. Additionally, Dow AgroSciences had obtained a label for the at-plant application of Telone II when environmental conditions are favorable and the company is also working to develop variable-rate strategies and risk management zones where fumigation only occurs where nematode populations warrant the treatment. In difficult situations, fumigation with Telone II provides significantly better control of nematodes than does Temik 15G. Growers who fumigate with Telone II must remember that this product can provide excellent control of nematodes but does not control thrips.

In addition to Telone II and Temik 15G, cotton growers in Georgia also can use seed-treatment nematicides AVICTA Complete Cotton from Syngenta, AERIS Seed-Applied System from Bayer CropScience, and Accelron N from Monsanto for control nematodes. AVICTA Complete Cotton and Accelron N both contain abamectin (Avicta) and thiomethoxam (Cruiser); however the Syngenta product uses azoxystrobin (Abound or Quadris) for additional seedling disease control while Monsanto uses pyraclostrobin (Headline) for additional seedling disease control. Although I have not tested Accelron N or pyraclostrobin for use as cotton seed treatments, I have tested AVICTA Complete Cotton and AERIS Seed-Applied System. In my studies, at lower nematode populations, both AVICTA and AERIS can be comparable in efficacy to Temik 15G at 5 lb/A for management of nematodes. As nematode populations increase, Temik 15G, 5 lb/A provided better early season management of southern root-knot nematodes and increased yields over the seed treatments. From these studies, both AVICTA and AERIS can be used effectively in the management of nematodes, but not with the same spectrum of activity that Temik 15G, 5 lb/A, had. Though I have more experience with AVICTA Complete Cotton than with AERIS Seed-Applied System, in comparative studies the products have performed similarly. Note: Use of a post emergent application of Vydate CLV (17.0 fl oz/A) may help in the management of nematodes and thrips when used to compliment a seed treatment.

2011 Recommendations for management of plant-parasitic nematodes.

1. Rotate field with non-host crops.
2. Where southern root-knot nematodes are a problem, consider planting PHY 367WRF or ST 5458B2RF.
3. Fumigate with Telone II, 3 gal/A where appropriate.
4. Use what Temik 15G is available in areas with more damaging nematode populations and save seed treatment nematicides for other areas.
5. Determine as QUICKLY as possible how much seed you will need treated with a seed-treatment nematicide (see above for options) and order ASAP.
6. Talk with representatives from DuPont to learn how VYDATE CLV (17.0 fl oz/A) may be used in conjunction with Temik 15G and seed treatments for additional management of nematodes and thrips.

Management of Early-Season Thrips (Roberts)

Thrips are consistent and predictable early-season pests of cotton which require management in Georgia. Preventive insecticides used at planting provide a consistent yield response and are used by most growers. With the anticipated shortage of Temik, growers need to arrange for alternative at-plant treatments for thrips NOW! At-plant treatments recommended for preventive thrips control include the carbamate Temik 15G (aldicarb), the neonicotinoid seed treatments Cruiser (thiamethoxam) and Gaucho (imidacloprid), and the organophosphate insecticide Orthene (acephate) applied as an in-furrow spray or seed treatment. Thiamethoxam is the insecticide component in Avicta Complete Cotton and Acceleron N. Imidacloprid is the insecticide component in Aeris Seed Applied System and Acceleron I. Achieving acceptable thrips control with foliar insecticide applications only is difficult, risky, and will require multiple well-timed sprays. Multiple early-season sprays may potentially flare or encourage problems with secondary pests such as aphids and spider mites.

Temik 15G applied at 3.5 lbs. per acre has been the standard for thrips control in Georgia for many years; higher rates of Temik (5-6 lbs. per acre) are often used to provide nematode control. Temik is the most efficacious at-plant insecticide available on thrips and typically provides control for 4+ weeks (rate dependent). With a limited supply of Temik, growers will be faced with decisions on which acres to utilize Temik. Nematode populations will likely be the deciding factor, but we must also remember that thrips populations are typically higher on early planted cotton and in conventionally tilled fields.

Cruiser and Gaucho seed treatments provide thrips control for about 21 days after planting. In environments conducive for rapid seedling growth, this level of protection is often acceptable. Foliar insecticide applications for thrips are rarely necessary after plants have 4 true leaves and are growing vigorously. Both Cruiser and Gaucho seed treatments perform similarly and are the best at-plant insecticide options available in the absence of Temik.

We have limited data on Orthene (acephate) in-furrow sprays and seed treatment with Orthene. Orthene treated seed will provide limited protection for 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. Orthene is an organophosphate insecticide (see comments below on potential injury with soil-applied organophosphate insecticides used in conjunction with diuron and fluometuron).

What about Thimet 20G (phorate)? Thimet is a labeled treatment for thrips on cotton; however, it has not been recommended for several years. Thimet is an organophosphate insecticide which provides fair to good control of thrips, but we have concerns about crop injury. Thimet does not control nematodes. **We have serious concerns about the use of phorate if preplant or preemergence applications of diuron or fluometuron are used.** Phorate, diuron, and fluometuron labels all have statements about potential interactions and crop injury; see comments below:

Thimet 20G Label (AMVAC): “Crop injury may occur if applications of diuron-containing herbicides such as Karmex herbicide or Direx herbicide are made in conjunction with soil-applied organophosphate pesticides.”

Diuron 4L Label (MANA): “Do not use Diuron 4L in preplant or preemergence applications where soil-applied organophosphate insecticides are used due to potential for severe cotton injury and possible stand loss.”

Cotoran 4L Label (MANA): “The use of Cotoran 4L preplant or preemergence in conjunction with a soil-applied organophosphate insecticide at planting may result in injury to cotton.”

Very little research has been conducted in Georgia with phorate or acephate use in cotton during the past 15 years. Many of the “newer” pre-emergence herbicides used today have not been adequately evaluated when used in conjunction with phorate or acephate.

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

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