

TIMELY INFORMATION

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Controlling Root Knot Nematode in Peanut without Temik 15G

Last fall, Bayer CropScience and the EPA agreed to a timeline to phase out the production and use of Temik 15G nematicide in the U.S. Recently, the production facility for the precursor for Temik and Sevin was rebuilt following an industrial accident. As many of you are aware, a lawsuit was filed to block the reopening of the plant. While a hearing was scheduled at the end of March to address the status of manufacturing operations, Bayer CropScience decided to pull the plug on Temik 15G production rather than waiting till 2014. Alabama peanut producers will have to adopt alternatives to the once widely used Temik 15G for the control of the peanut root knot nematode as well as thrips in peanut.

Nematicide Alternatives to Temik 15G

Cancellation of Temik 15G has left Alabama peanut producers with few chemical control options. The most widely available but most difficult to apply is the pre-plant fumigant nematicide Telone II. While there are few differences in effectiveness, ease of handling and application as well as lower treatment costs made Temik 15G the product of choice over Telone II for controlling peanut root knot nematode.

Telone II

For light to moderate infestations of peanut root knot nematode, broadcast Telone II at 6 to 9 gallons per acre with a moldboard plow or other suitable tillage equipment set to deliver the product to a depth of 12 inches below the final seedbed level in the fall or spring. Seal the soil surface with a cultipacker or similar compaction device. The treated area should remain undisturbed for a minimum of a week to insure adequate exposure of the nematodes to the Telone II.

A row treatment of Telone II at 4.5 to 6 gallons per acre to treat the band of soil where peanut will be planted is a less costly option to the above broadcast program. Use suitable bedding or strip till equipment with one chisel per row set to form beds to place Telone II at a depth of 12 inches and then immediately seal the soil surface with a drag. Additional soil sealing can be obtained by going over the bed with disk hiller, bed shaper, press sealer, or rolling basket. Leave the beds undisturbed for at least 7 days after Telone II injection prior to planting. On bedded land, knock the beds flat when planting so the seed are sown close to the treated zone.

Enclosure 4

Enclosure 4 flowable fungicide and nematicide was registered in 2010 for the managing light to moderate populations of the peanut root knot nematode on peanut. The active ingredient is Enclosure 4 is the fungicide iprodione, a chemical that is far less toxic than Temik 15G and other contemporary nematicides. In addition to activity against the peanut root knot nematode, this product will also provide control of the less common but sometime damaging seedling disease shorshin that is caused by the soil fungus *Rhizoctonia solani*.

For nematode control, apply 2 to 3 pints per acre of Enclosure 4 at-plant on a 6 to 8 inch T-band just ahead of the furrow closing device. Follow with 2 to 3 pints of Enclosure 4 per acre directed to the soil and base of the peanut plants at early pegging (i.e. about 45 to 60 days after planting). Use higher rate to control moderate peanut root knot infestations.

So far, I have not been able to find any information concerning the mode of action of Enclosure 4 against nematodes. The low toxicity of the active ingredient suggests that something other than acute toxicity is responsible. Since Enclosure 4 has only been in nematicide screening trials on peanut for only the past two years, there's not a great deal of efficacy and yield response data. Devgen literature noted yield gains with Enclosure 4 comparable to those obtained with Temik 15G in several recent Georgia field trials. In two Alabama studies, yield response with the recommended Enclosure 4 program have been similar to or less than those obtained with Temik 15G. In addition, yields for the Temik 15G-treated and non-treated controls also did not significantly differ in either year.

Vydate

Vydate C-LV (oxamyl) may be applied as a post-plant supplemental treatment following the application of Temik 15G or Telone II for the control of peanut root knot nematode on peanut. Band or broadcast 17 fluid ounces of Vydate C-LV 14 to 28 days after true ground cracking in a minimum of 8 gallons of spray volume per acre or sufficient water to obtain thorough coverage of the foliage. Follow with a second application of Vydate C-LV 14 days later.

Vydate, regardless of the formulation, have never been considered to be as active against peanut root knot nematode as a nematicidal rate of Temik 15G. Vydate C-LV may be useful in fields following an application of Telone II where nematode pressure is high or possibly as a supplemental treatment on Tifguard peanut under the same conditions. Since efficacy trials with Vydate C-LV have not been conducted in many years, additional research needs to be conducted to establish whether this nematicide/insecticide would be useful tool for managing root knot nematode in peanut.

NemOut

NemOut is a bio-rational nematicide formulated for applications as an in-furrow spray at planting and at side dressing on cotton and peanut for the control of root knot and reniform nematodes. The bio-control component is the fungus *Paecilomyces lilacinus* strain 251. Availability of this product is very questionable. Previously, Bob Kemeriat at UGA evaluated NemOut for the management of peanut root knot nematode on peanut. In some trials, yield gains similar to those obtained with Temik 15G were noted. No trials have been conducted in Alabama to assess the efficacy of this product against the peanut root knot nematode.

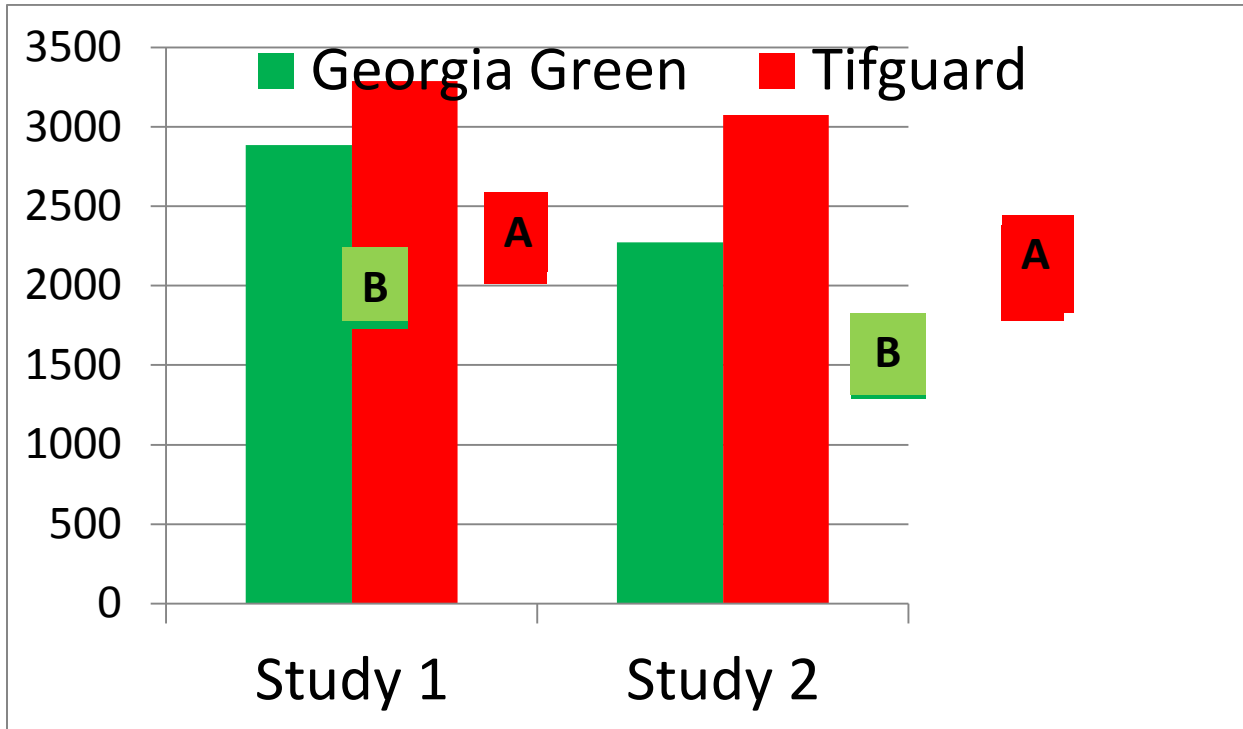
Nematode Resistant Peanut Cultivar Tifguard

The peanut cv 'Tifguard', which was released by USDA-ARS at Tifton, GA, was the first commercial cultivar with a high level of resistance to both tomato spotted wilt and peanut root knot nematode *Meloidogyne arenaria* race 2. Root knot resistance in Tifguard and any forthcoming nematode resistant cultivars is provided by the same single dominant gene. Control failures due to the selection of resistance-breaking biotypes of *M. arenaria* will occur if Tifguard is grown over several consecutive years in the same field.

In a series of Georgia trials were conducted with Tifguard and Georgia Green in fields naturally infested with *M. arenaria* in 2007 and 2009 on the Coastal Plain Experiment Station in Tifton and in 2009 on a commercial field in Decatur Co., GA. In 2007, the average post-season root-gall rating for Georgia Green was 3.78 (0-10 scale), while Tifguard rated 0.07. In the same trial, Tifguard yielded 4891 lb/A compared with 2762 lb/A for Georgia Green. In the two trials conducted in Tifton in 2009, Tifguard yielded 3430 lb/A and 2338 lb/A while Georgia Green yielded 2439 lb/A and 1726 lb/A, respectively. Post-season gall numbers per 2 g of root tissue were 171.8 for the Georgia Green and 19.8 for Tifguard. In the commercial field study, the end of season root-gall rating and yield for Georgia Green were 3.0 and 2635 lb/A, respectively, and for Tifguard, 0.083 and 4925 lb/A, respectively. In addition to superior TSWV and root knot resistance, Tifguard also has demonstrated partial resistance to early and late leaf spot as well as white mold equal to that displayed by Florida 07 and Georgia-07W. Antidotal comments concerning the poor peg strength of Tifguard compared with other peanut cultivars, which may result in lower yields, have been raised.

In 2010, yield of Tifguard and Georgia Green on peanut root knot infested sites were compared at the Wiregrass Research and Extension Center in Headland, AL. Yield gains with Tifguard compared with Georgia Green ranged from about 500 to 700 lb/A (Table 1). No yield additional yield gains are seen when a nematicide like Temik 15G was applied to Tifguard.

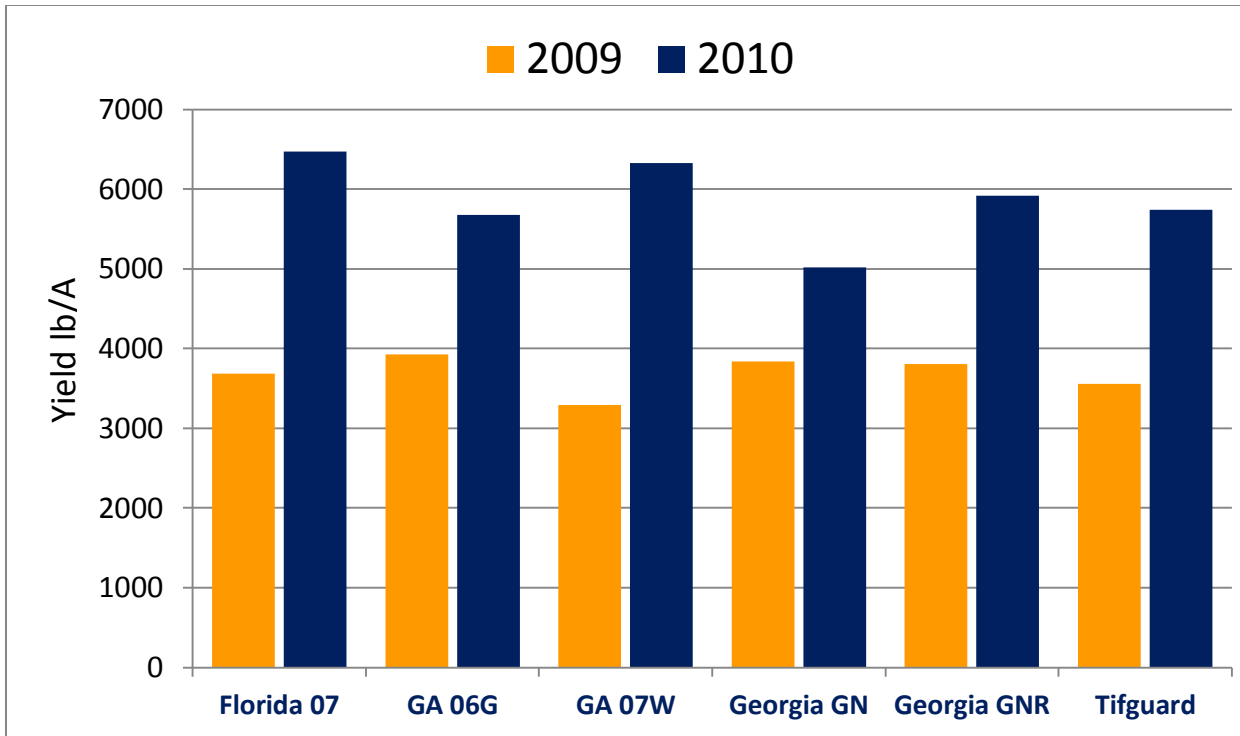
Table 1. Yield response of Tifguard and Georgia Green under heavy root knot pressure was compared in two studies at the WREC in 2010.



At GCREC, disease resistance and yield response of Tifguard was compared with the newly released cultivars Florida 07, Georgia-06G, Georgia-07W, Georgia Greener in 2009 and 2010 (Table 2). Under heavy rust and late leaf spot pressure in 2009, yield for Tifguard along with Florida 07, Georgia-06G, Georgia-07W, Georgia Greener, and Georgia Green did not significantly differ. In the same study, Florida 07, Georgia-06G, and Georgia Green yielded significantly higher than Georgia-07W. With very low leaf spot and rust levels in the following year, Tifguard had significantly lower pod yields compared with Florida 07 and Georgia 07W but not Georgia-06G and Georgia Greener. All peanut cultivars had significantly higher yields in 2010 than Georgia Green. While there have been a few other studies where Tifguard yields have not been lower compared with other contemporary commercial peanut cultivars, Tifguard often produces competitive peanut yields.

It must be remembered that Tifguard is ‘highly resistant’ and not necessarily ‘immune’ to the peanut root knot nematode. Root knot resistance in Tifguard and any forthcoming root knot resistant cultivars is due to same single dominant gene. Low galling indices and egg mass counts show that Tifguard supports a very low level of peanut root knot nematode reproduction. As was the case with cyst and southern root knot nematodes on soybean, control failures due to the selection of resistance-breaking biotypes of *M. arenaria* will occur if Tifguard is grown over several consecutive years in the same field.

Table 2. Yield response of Tifguard compared with other recommended peanut cultivars at GCREC in 2009 and 2010.



In summary, Tifguard is probably the best option in 2011 that is available to peanut producers for managing peanut root knot nematode. Peanut producers will have to be reminded that planting fields with moderate to high populations of the peanut root knot nematode to Tifguard over several successive years will result in control failures due to the selection of a new race of *M. arenaria* that can specifically reproduce on this and any other root knot resistant peanut cultivars. In addition, a nematicide treatment may not really slow the selection pressure in fields frequently cropped to the Tifguard peanut. Ideally, Tifguard should be grown in a heavily root knot infested field no more than once every three years.

Telone II is the best of the available nematicide option for managing root knot in peanut. Handling and application difficulties make the nematicide a poor choice compared with planting Tifguard. Also, likely yield gains with Telone II on a nematode susceptible cultivar like Georgia-06G may be lucky to match the yield advantage from planting Tifguard.

Several nematicides with novel modes of action are in development. Hopefully, those products will be screened this year but registration is probably years away.