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# Crop Production Guide Series

## Time To Check For Yield Robbing Nematodes

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They can't be seen and their distribution can be spotty across a field but when nematodes are a serious problem, cotton plants can be severely stunted and their roots covered with galls or "root-knots" (figures 1 & 2). We have documented losses averaging 26% of the field's yield potential on half of the irrigated acreage in the Southern High Plains.



Figure 1. Root-knot nematode "galling" on cotton roots.



Figure 2. Obvious nematode "galling" on a carrot.

Root-knot nematodes don't do well in dry soils but obviously we can't fallow irrigated fields. Rotation with peanuts can be effective but is a limited practice because we can't plant enough peanuts to rotate all the nematode-infested problem fields.

Temik has been used fairly routinely by producers but probably has not gained wide enough acceptance because they don't know the extent of their problem. Temik is not a cure-all but can keep nematodes away from the root zone for a few weeks. Rates between 3.5 and 5.0 pounds per acre are frequently used and will reduce yield losses by about a third. Additional benefits are obtained through excellent early season thrips control.

But the key to successful nematode management in the absence of proven resistant varieties is to sample suspect fields to characterize the potential for nematode problems.

November and December are good months to check for nematode problems and with recent rains, sampling should be easier. Nematodes increase in number during the growing season. Fall nematode populations are fairly accurate indicators of the potential for yield losses for the next growing season. Nematode numbers peak at sometime in the late summer or fall, and then begin to decline as eggs hatch into juveniles, which have no food source and die. Most root-knot nematode eggs hatch when they have acquired enough heat units, and if soil conditions are not too dry.

### **Good soil samples have 3 things in common:**

1) Soil is taken from an area where the nematodes are highest. Generally this is close to the tap root of the plant, and at an appropriate depth. Around mid-season, samples can be taken from a 6" depth, but as the season progresses, it is necessary to sample deeper. Fall samples should be at 8 - 12" depths. It is important to sample when there is adequate soil moisture. Dry soil means that you are not getting deep enough.

2) Composite samples are collected. Root-knot nematode population density can vary greatly within a field. We recommend taking a little bit of soil at 15 to 20 locations (figure 3). Each location should be 10 to 20 paces apart. Mix all the soil in a plastic bucket, and then take a sub-sample representing about 1 quart of soil. This is your composite sample. To have a good estimate of the average nematode density, more than one composite sample should be taken. For a 120-acre field, with one soil type, three composite samples are recommended. This gives an indication of how much the population varies around the field. In some cases, composite samples within the same field have varied as much as 0 to 10,000 root-knot nematodes per pint of soil.

3) Bagged samples are treated with care to avoid killing nematodes. Samples should be placed in a plastic bag so they do not dry out. Drying the soil out kills the nematodes. Samples should not be left out in the sun for any reason. Even 10 min. on a relatively cool day (50 ° F) is enough to kill nematodes, if left in the sun. Freezing the samples will also kill the nematodes, so don't sample when it is below 40 ° F. Send, or better yet, hand deliver the sample promptly to a lab for analysis.

Laboratories in Texas for nematode assays:

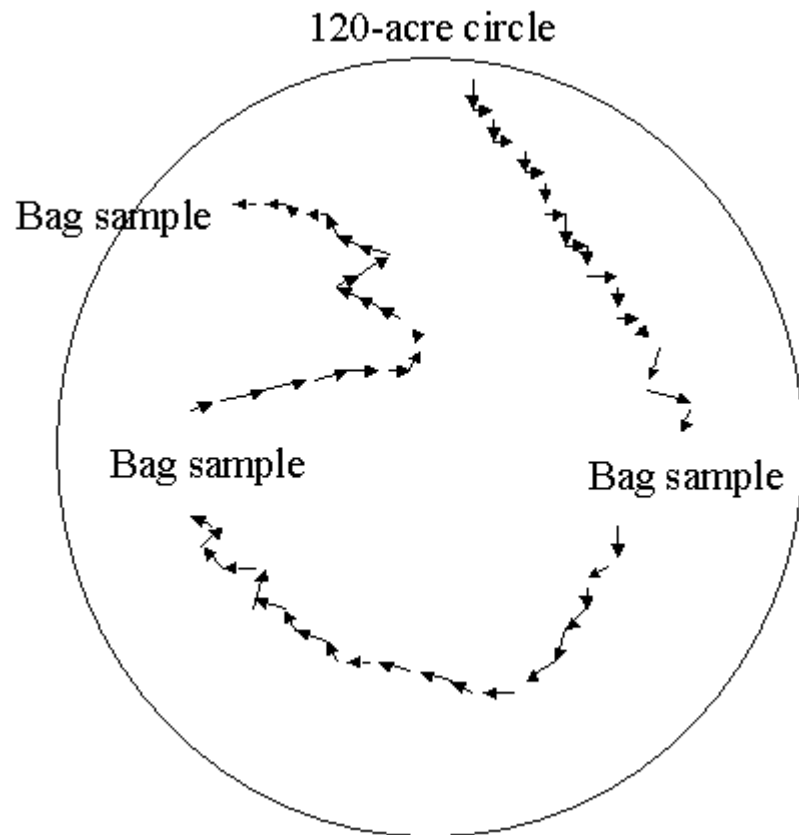
A&L Plains Analytical Laboratories: 302 34<sup>th</sup> St. Lubbock, TX 79404. Phone 806-763-4278.

Texas A&M Plant Disease Diagnostic Laboratory, 1500 Research Pky, 2589 TAMU, College Station, TX 77843-2589. Phone: 979-845-8033.

Texas Agricultural Experiment Station, Rt. 3, Box 219, Lubbock, TX 79403, care of Dr. Terry Wheeler. Call first, because only a limited number of samples accepted. Phone 806-746-4014.

*Some laboratories require specific information when making management recommendations. Call the lab first to find out the specific information you should send with your sample.*

Figure 3



Crop Production Guide Series, a new supplement to FOCUS on Entomology newsletter, is published by Texas Cooperative Extension Route 3, Box 213AA Lubbock, TX 79403

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