NEMATODE/PEST WORKSHOP: WHAT IS AN INTERACTION?

N. R. Walker and C. S. Rothrock
Department of Plant Pathology
University of Arkansas
Fayetteville, AR

Introduction

An interaction is an association between two or more pests which results in greater plant damage than if either pest occurred alone. For cotton, the most common interactions occur between; nematodes (root-knot, reniform, and lance) and seedling disease fungi (*Thielaviopsis basicola*, *Fusarium* spp., *Rhizoctonia solani* and *Pythium* spp.) or seedling disease fungi or nematodes and insects (thrips or white flies). Disease interactions can be additive, meaning the sum of disease severity is equal to the severity of disease caused by either pest alone or synergistic, meaning the severity of damage is greater than the sum of damage caused by either pest.

How Do Interactions Occur?

Interactions occur because one pest directly or indirectly affects the plant or the activity of the other pest. Interactions can result from indirect effects due to plant stress which reduces plant growth and development. For example, thrip infestation increases the severity of seedling diseases, due to increased plant stress caused by thrip activity (Colyer, 1991). Increased plant stress caused by whiteflies in association with the reniform nematode also can result in greater yield reductions (Cook et al, 1997). Direct effects would be the breakdown of physical plant barriers. An example of nematodes disrupt the cell layers which normally prevent fungi from colonizing plant vascular tissues, including *Thielaviopsis basicola* (black root rot) or *Fusarium oxysporum* f. sp. *vasinfectum* (Fusarium wilt).

Management of Interactions

Interactions can be broken by controlling one of the two pest. Chemical control of thrips reduces the level of damage caused by seedling disease pathogens. Nematode management through the use of chemicals can reduce the losses caused by the interaction between the nematode and the black root rot or Fusarium wilt pathogens.

References

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