

INDUCED RESISTANCE TO ROOT-KNOT AND RENIFORM NEMATODES IN COTTON**Sudarshan Aryal****Department of Plant Pathology, University of Georgia
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Tifton, GA****Abstract**

Induced resistance, which results in enhanced defense mechanisms in plants, can be elicited by biotic or abiotic factors such as pathogens causing a hypersensitive necrotic reaction, virulent and avirulent pathogenic strains, and certain chemicals. Induced resistance has been studied primarily against other pathogen groups, but induced resistance against plant-parasitic nematodes has been documented. Our objective was to determine whether co-infection of cotton by root-knot (*Meloidogyne incognita*) and reniform (*Rotylenchulus reniformis*) nematodes affects the population level of either nematode compared to infection by each species individually. A series of split root trials were conducted and each trial had 10 replications in a randomized complete block design. The four treatments were single plants inoculated with 1) *R. reniformis* only, 2) *M. incognita* only, 3) both *R. reniformis* and *M. incognita*, and 4) a non-treated control. Each plot consisted of a single plant with its root system growing into two adjacent pots, with each pot containing 750 cm³ of steam pasteurized soil. One half of the root system of 6 week old plants was inoculated with *R. reniformis* on day 0 and other half was inoculated with *M. incognita* on day 0 or on day 14 depending on the experiment. Experiments were conducted on both DP 0935 B2RF (susceptible to both nematodes) and on LONREN-1 (susceptible to *M. incognita*, but resistant to *R. reniformis*). Experiments were terminated 8 weeks after inoculation with *M. incognita*, and both soil (vermiform extraction) and roots (egg extraction) from each half of the root system were processed to determine the total nematode population levels. Root galling was rated on a 0 to 10 scale. Analysis of variance and means separation by Fisher's protected LSD indicated that there were no significant differences ($P \leq 0.05$) in root galling or nematode levels between plants with both nematodes and plants with only one species when the two nematode species were inoculated on the same day. However, when *M. incognita* was inoculated 14 days after *R. reniformis*, reductions in galling (19 % on DP 0935 B2RF and 44 % on LONREN-1) and *M. incognita* population levels (38 % on DP 0935 B2RF and 43 % on LONREN-1) were significant on plants that were inoculated with both nematodes compared to plants that were inoculated only with *M. incognita*. This study documents for the first time that infection of cotton by a nematode can elicit enhanced defense through induction of systemic acquired resistance to another nematode species.