GALLING OF SOUTH CAROLINA *MELOIDOGYNE INCOGNITA* POPULATIONS ON RESISTANT COTTON GENOTYPES

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Abstract

Most cultivars currently marketed in the United States have excellent resistance to the fusarium wilt/root-knot nematode (*Meloidogyne incognita)* complex. Many cultivars are, however, still very susceptible to yield losses caused directly by root-knot nematode. Some cultivars, such as 'NemX', Stoneville's 'LA 887', and Paymaster '1560', exhibit moderate levels of resistance. Excellent resistance to root-knot nematode is available in unadapted germplasm or genotypes such as Auburn 634 or M-315, many of which are derived from Clevewilt 6-8, but lack acceptable agronomic traits. Preliminary data (J. L. Starr, pers. comm.) has indicated that some naturally occurring root-knot nematode populations are virulent on resistance derived from Clevewilt 6-8. Our objective was to determine whether populations virulent on commonly used sources of resistance are present in South Carolina.

Four greenhouse tests were conducted using 30 root-knot nematode populations collected throughout the cotton producing regions of South Carolina. Each of the four tests was a randomized complete block design with three replications. Populations were cultured on 'Rutgers' tomato and maintained in the greenhouse. Root-knot nematode eggs were extracted for inoculum using NaOCl. Cotton seedlings were transplanted from flats to four inch pots containing a 6:1 ratio of sandy loam soil to potting mix and inoculated with 10,000 eggs per pot at the first true leaf stage. Plants were harvested at 42-48 days after planting and galls per root system were recorded.

Mean number of galls/plant across all genotypes and populations varied greatly among runs. There were significant differences among the 5 cotton cultivars in the numbers of galls produced by the 30 root-knot nematode populations. As expected, Deltapine Acala 90 supported greater galling and Auburn 634 less galling than the other genotypes. NemX, Stoneville's LA887, and M-315 were intermediate between Deltapine 90 and Auburn 634, but similar to each, other in the levels of galling supported. There were significant differences among the 30 root-knot nematode populations in number of galls produced on the 5 cotton cultivars. Only one population did not produce significant levels of galling on Deltapine's Acala 90. Only one population produced as many galls on a resistant genotype (LA 887) as on the susceptible standard, Deltapine's Acala 90. Six populations produced levels of galling on Auburn 634 which were greater than 10% of the levels produced on Deltapine's Acala 90.

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