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New Sources of Resistance to the Reniform (*Rotylenchulus reniformis*) and Root-Knot (*Meloidogyne incognita*) Nematode in Upland (*Gossypium hirsutum* L.) and Sea Island (*G. barbadense* L.) Cotton

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The reniform nematode (*Rotylenchulus reniformis* Linford & Oliveira) is an important problem in U.S. cotton, and all cultivars support high *R. reniformis* populations. The objectives of this research were to find better sources of resistance to *R. reniformis* than are known within *G. hirsutum* L. and *G. barbadense* L. and to determine if any of these sources are also resistant to the root-knot nematode *Meloidogyne incognita* (Kofoid & White) Chitwood. A two-tiered study evaluated 1866 primitive accessions of *G. hirsutum* and 907 of *G. barbadense*. To quickly eliminate highly susceptible genotypes, tier one compared one plant per accession with six plants of susceptible 'Deltapine 16' and six of moderately resistant *G. barbadense* 'TX-1348' in the greenhouse for resistance to the reniform nematode. Tier two used fully replicated experiments in growth chambers to test promising accessions from tier one experiments against *R. reniformis* and *M. incognita* separately. Plants were inoculated 2 wk after planting in 500-cm³ pots and nematodes extracted from soil 7 wk later. Most accessions were highly susceptible, and only 5% of *G. hirsutum* and 12% of *G. barbadense* accessions had fewer *R. reniformis* than TX-1348. In growth chambers, 34 of 78 accessions (44%) suppressed *R. reniformis* ($P \leq 0.05$) compared with Deltapine 16. *G. hirsutum* accessions TX-2469, TX-1586, TX-748, TX-25, TX-1828, and TX-1860; and *G. barbadense* accessions GB-127, GB-1083, GB-1141, GB-1143, TX-110, GB-1147, GB-207, GB-833, GB-210, GB-212, GB-126, GB-581, GB-1113, GB-1081, TX-502, GB-485, GB-536, and GB-262 had > 10% and < 34% of the *R. reniformis* on Deltapine 16 and were classified moderately resistant. TX-1828, TX-25, and TX-1860 were root-knot nematode resistant. *G. barbadense* accessions GB-49, GB-13, GB-264, GB-171, and GB-713 had < 11% of the *R. reniformis* of Deltapine 16 ($P \leq 0.01$) and were classified resistant. *G. barbadense* GB-713 had 3% of the *R. reniformis* of Deltapine 16 in three experiments.