

HOST PLANT RESISTANCE FOR RENIFORM AND ROOT-KNOT NEMATODE MANAGEMENT IN COTTON

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Abstract

In the US, losses to plant-parasitic nematodes are especially severe in cotton where root-knot (*Meloidogyne incognita*) and reniform (*Rotylenchulus reniformis*) nematodes each typically cause greater losses nationwide than any other single pathogen. Damage from nematodes is likely to become even more significant in cotton because the predominant nematicide, aldicarb, is being phased out in the US. Cotton germplasm that is highly resistant to *M. incognita* was first created in the 1960s, but highly resistant cultivars have not yet been developed. A high level of resistance to *M. incognita* in cotton is a multigenic trait and has proven difficult to maintain in breeding programs. Resistance to *R. reniformis* was recently introgressed from another *Gossypium* species. Sources of resistance to *M. incognita* and *R. reniformis* in available germplasm are very limited. Ongoing research has identified DNA markers for two chromosomal regions imparting resistance to *M. incognita* and one region imparting resistance to *R. reniformis*, thereby advancing the possibility of marker assisted selection, which is widely believed to be a prerequisite for commercialization of resistant cotton cultivars. In the absence of resistance, both the absolute and percentage yield suppression in cotton caused by *M. incognita* increase as yield potential increases, which indicates that resistance will have proportionally greater benefit in high-yielding cultivars. Although a high level of resistance is preferable, moderate levels of resistance have been shown to contribute significantly to nematode suppression in the field.