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Resistance to the South African Root-Knot Nematode Population Densities in Artemisia annua: An Anti-Malaria Ethnomedicinal Plant

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Abstract: Nematode resistance to the tropical root-knot (Meloidogyne species) nematodes is one of the most preferred nematode management strategies in development of smallholder resource-poor farming systems. Due to its pharmacological and ethnomedicinal applications, Artemisia annua is one of the underutilised crops that have attracted attention of policy-makers in rural agrarian development in South Africa. However, the successful introduction of this crop in smallholder resource-poor farming systems could be upset by the widespread aggressive Meloidogyne species, which have limited management options. The objective of this study therefore was to determine the degree of nematode resistance to the South African M. incognita and M. javanica population densities on A. annua seedlings. Uniform three-week-old seedlings in pots containing pasteurised growing medium under greenhouse conditions were inoculated using a series of eggs and second-stage juveniles of two Meloidogyne species in separate trials. At 56 days after inoculation, treatments were highly significant on reproductive factor (RF) for M. incognita and M. javanica on A. annua, contributing 87 and 89% in total treatment variation of the variables, respectively. At all levels of inoculation, RF values for M. incognita (0.17-0.79) and M. javanica (0.02-0.29) were below unity, without any noticeable root galls. Infection of A. annua by both Meloidogyne species had no significant effects on growth variables. In conclusion, A. annua seedlings are resistant to the South African M. incognita and M. javanica population densities and could therefore be explored further for use in smallholder resource-poor farming systems.

Keywords: ethnomedicial plants, medicinal plants, underutilised crops, plant parasitic nematodes

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