

Relationships between initial population densities of *Meloidogyne incognita* race 2 and nematode population development in terms of variable soybean resistance

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Abstract: The effect of increasing initial population density levels (P_i) of *Meloidogyne incognita* race 2 on nematode population development and yield of a susceptible (Prima2000) and resistant (LS5995) soybean cultivar was investigated. Two experiments, one in a hail net cage and one in microplots, were conducted one each during two consecutive growing seasons at Potchefstroom in the North West Province of South Africa. Nematode reproduction was assessed by determining the number of eggs and second-stage juveniles (J2) in the rhizosphere and roots, egg masses, egg-laying females (ELF) and reproduction factor (Rf) values per root system at harvesting 110 days after planting. Percentage yield reduction in the two cultivars was also calculated. Strong non-linear relationships existed between all nematode variables as well as between P_i and percentage yield loss in both cultivars for both experiments in this study. Significantly higher numbers of eggs and J2, egg masses and ELF were maintained in the roots of the nematode-susceptible Prima2000 than in the resistant LS5995 from $P_i = 100$ and higher in both experiments. Rf values were inversely related to P_i for both cultivars and were lowest on LS5995, with Prima2000 maintaining significantly higher Rf values in both experiments. Yield loss in LS5995 was at least six times higher than that of Prima2000. The difference in monetary terms is demonstrated, although it is suggested that host plant resistance to plant-parasitic nematodes may not be sufficient as the only management tool in highly infested soils or in rotation systems including nematode susceptible crops.

Key words: Initial population levels, *Glycine max*, host-parasitic relationship, *Meloidogyne incognita* race 2, resistance, soybean.
