

Session
Nematology

17:00

RELATIVE SUSCEPTIBILITIES OF POTATO GENOTYPES WITH A SINGLE RESISTANT GENE FOR *MELOIDOGYNE CHITWOODI*

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Four potato genotypes with a single resistant gene against *M. chitwoodi* were examined for their degree of relative susceptibility compared to the susceptible cv. Désirée. The potato genotypes were grown in 10-liter pots in artificial soil at a range of initial nematode densities (P_i) from 0 (control), 0.125, 0.25, 0.5, 1, 2, 4, 8, 16, 32, 64 to 128 juveniles (gram of dry soil)⁻¹. The pot experiment was carried out in a climate controlled glasshouse. The final population density (P_f) and various plant characteristics such as plant height, fresh and under water weight of tubers, fresh root weight, shoot and root dry weight were measured and related to initial nematode density to model yield. Additionally, the root-knot index (RKI) of the tubers was assessed.

Plant height was found to increase with nematode densities in all the genotypes. The root-knot index (RKI) score was below 10 for all resistant tested genotypes, which is below the minimum threshold for industrial processing when potato supply is abundant. By comparison, the susceptible cultivar Désirée scored above the maximum threshold when supply is low. Yield, expressed as relative total fresh weight, under water weight and percentage of starch dry matter of tubers, was found to be independent of the initial nematode densities in one genotype and reduced in the three other genotypes with an increase in P_i . Models of estimates of final population dynamics of *M. chitwoodi* on the resistant genotypes made so far, were all below the equilibrium line ($P_i = P_f$); their maximum values at the highest P_i were smaller or equal to 0.1 juveniles (gram of dry soil)⁻¹. The tested genotypes proved to be highly resistant. This research is part of a greater research project testing both methodology and population dynamical models in order to downscale and develop a cheap, reliable and consistent method for routine resistance testing. From the results so far, the relative maximum P_f value, maximum population density ("M") at high initial P_i seems to be a good parameter to indicate degree of resistance.

Key words: Screening resistance, population dynamics, and maximum population density.