

S20–T2

Developing methodology for screening the relative susceptibility of potatoes with resistance against *M. chitwoodi*

Teklu M.G.¹, Been, T.H.¹, Schomaker, C.H.¹, Molendijk, L.P.G.², Van Beersand, T.G.² and Beniers, A.¹

¹Plant Research International, Wageningen University and Research Centre, Plant Sciences Group, P.O. Box 16, 6700 AP, Wageningen, The Netherlands;

Misghina.Goitomteklu@wur.nl; Thomas.Been@wur.nl

²Applied Plant Research, Edelhertweg 1, NL-8219 PH Lelystad, The Netherlands; Leendert.Molendijk@wur.nl

In The Netherlands resistance genes against *Meloidogyne chitwoodi* became available as a result of the DREAM (EU QLRT-1999-1462) project. Several Dutch potato breeders have used these genes to develop potato genotypes containing a single resistance gene against *M. chitwoodi*. Some of these genes also provide resistance against other *Meloidogyne* species. Currently, a research project has been initiated by Dutch breeders to investigate the impact of these genotypes on the population dynamics, yield loss and tuber infestation with *M. chitwoodi*. Also, the development of a simple and cheap resistance test, as has been realised for PCN resistant potatoes, is pursued. At this moment three large experiments have been conducted to obtain the required basic information. Ten potato genotypes were screened for their resistance against *M. chitwoodi*. The susceptible potato cv. Désirée was used as a susceptible control. Potato genotypes were grown in 5 and 10 l pots in an artificial soil at ranges of initial nematode densities (P_i), e.g. from 0, 0.125, 0.25, 0.5, 1, 2, 4, 8, 16, 32, 64 to 128 (g of dry soil)⁻¹, to enable fitting population dynamical and yield models and estimating relative susceptibility (r_s), tolerance, yield loss and tuber quality, expressed as root-knot index (RKI). The partial resistance of the genotypes with a single resistance gene was very high > 99%, except for two genotypes with non-*M. chitwoodi* resistance genes (< 50%). Three of the resistant genotypes also showed a remarkable tolerance for high initial population densities of *M. chitwoodi*. A marked improvement of tuber quality was found in eight genotypes with *M. chitwoodi* resistance, with RKI value below 10, the minimum threshold for acceptance of ware potatoes for industrial processing. So far, on nine genotypes screened for resistance, the population dynamical models used to describe relative susceptibility, fitted well. From the comparison of the population dynamics of both the susceptible and resistant varieties it can be concluded that downscaling of the screening method is feasible.