Some Interactions Between the Clover Cyst Nematode *Heterodera trifolii* Goffart and Resistant and Susceptible White Clover *Trifolium repens* L.

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ABSTRACT

Although white clover Trifolium repens L. contributes significantly to the New Zealand economy through nitrogen fixation and its nutritive value to stock, its productivity and persistance are restricted by many diseases and pests. A plant breeding programme has resulted in white clover genotypes of widely differing resistance to the clover cyst nematode Heterodera trifolii Goffart. The most important resistance mechanism operates after nematodes have penetrated roots: they are unable to progress beyond the J2 stage. The few nematodes that do succeed in reproducing on resistant plants are smaller and produce fewer eggs than their counterparts on susceptible genotypes. Progeny of these successful individuals are more likely to succeed in parasitising resistant genotypes than is the broader H. trifolii population. Since considerable damage to seedlings may occur without establishment of a feeding site, resistant seedlings are not necessarily more tolerant of H. trifolii than are susceptible seedlings. Nevertheless, some seedlines exhibit high levels of both resistance and tolerance. Selection of an appropriate fertiliser regime was important to the experiments in this thesis and in resistance screening. Inappropriate regimes restricted the number of cysts on a susceptible genotype.

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