

 **P.18 - Evaluation of the selection pressures exerted by resistant Solanaceous crops on root-knot nematodes**

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Root-knot nematodes cause severe disease on most economically important crop plants. Due to the banning of chemical nematicides, current control strategies are mainly based on the deployment of resistant cultivars. In the framework of the RA4.2 ENDURE activity, research has been conducted to evaluate the durability of the Mi(s) and Me(s) resistance genes carried by tomato and pepper, respectively. The complementary objectives of the work were the following: (1) comparison of the selection pressure of the resistance genes on root-knot nematode populations, when these genes are used separately or in combination, in either susceptible or partially resistant genetic backgrounds (non specific quantitative effects), and in either heterozygous or homozygous genotypes for these genes (allele dosage effect); (2) characterization of the life-history traits (e.g. larval mobility and infectivity, reproductive potential, competition experiments with avirulent nematodes, etc.) of the nematode populations able to overcome the resistance (i.e., virulent populations). One significant experimental result is the observation that a reproductive fitness cost is indeed associated with nematode virulence. The adaptative significance of trade-offs between selected characters and fitness-related traits suggests that, although the resistance can be broken, it might prove durable in some conditions if the virulent nematodes are counterselected in susceptible plants, which could have important consequences for the management of plant resistance in the field.