GENETIC QUANTITATIVE AND QUALITATIVE EVALUATION FOR RESISTANCE TO ROOT KNOT NEMATODE IN PEPPER

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ABSTRACT

Seven pepper parental germplasm (*Capsicum annuum L*) were used in making non-reciprocal diallel pattern of crosses to study the genetics of resistance to the root knot nematode. Number of galls and number of eggs counted on plant roots after the artificial inoculation with root knot nematode were efficient criteria to evaluate degree of resistance or susceptibility of pepper genotypes to this nematode. The inheritance of plant reaction to root knot nematode in pepper, measured by number of galls or number of eggs, involved both additive and non-additive type of gene action. The GCA/SCA ratio indicated that the additive type of gene action was more important in the inheritance of this character. The results indicated that dominance acted in the direction of the parent with higher expression of resistance to root knot nematode measured by number of galls. The degree of dominance measured by $(H_1/D)^{1/2}$, averaged over all loci, were 0.95 and 0.92 which indicated that the dominance was close to be complete dominance toward high degree of resistance to root knot nematode measured by number of galls and number of eggs, respectively. The relative values of the Vr and Wr showed that the parental cultivars Murch and Mirch had the lowest values which indicated that these parental cultivars contained the most dominant genes. On the other hand, the parental cultivars California Wonder and Yellow Wax had the highest Vr-Wr values and, hence, contained the most recessive genes.

Key words: Resistance, Root Knot Nematode, Capsicum annuum.

INTRODUCTION

Pepper is one of the most important vegetable crop all over the world as well as in Egypt. Root knot nematode *Meloidogyne* species, constitute a major group of plant–pathogenic nematode affecting crop production in Egypt and throughout the world