



Pepper morphological traits related to resistance to *Phytophthora capsici*

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ABSTRACT

Objective: An improvement programme to obtain pepper cultivars for paprika production with a sufficient degree of hardiness to be cultivated in calcareous soils and little available water, which produce an intensely red fruit and which are resistant to *Phytophthora capsici*.

Methodology and results: Inheritance of 10 morphological and quantitative traits related to plant and fruit development and

resistance to the pathogen *Phytophthora capsici* was studied in an intra-specific cross between a non-pungent, susceptible *Capsicum annuum* parent (cv. Americano) and a wild, pungent and resistant line (Serrano Criollo de Morelos-334). Crossing was by bud pollination of emasculated flowers. The main raceme of individual F₁ plants was self pollinated to obtain F₂ seed. Data were obtained from the segregation of 166 F₂ plants and 50 F₃ plants in four years. Three of the traits analyzed (necrosis length, leaf width and leaf length) exhibited a transgress segregation. A multiple linear regression analysis was applied in order to establish a relationship between necrosis length and some of the morphological traits measured such as length and width of leaf; length, diameter and weight of fruit; capsaicin levels in fruit; and presence of hair on leaves and stems. The results identified a linear dependence between necrosis length (as an inverse measurement of resistance) and leaf width, fruit diameter and hair presence in the stem. Pungency was not related with resistance.

Conclusion and application of findings: The most probable model which can be proposed establishes a polygenic and probably multicomponent inheritance. We propose a theoretical correlation to predict resistance to the pathogen *P. capsici* in pepper plants based on the measure of morphological traits.

Key words: *Capsicum annuum*, pungency, necrosis length, breeding program

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