B5: Oral

Search for resistance to bacterial wilt in a Brazilian *Capsicum* germplasm collection

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Bacterial wilt caused by *Ralstonia solanacearum* is a major diseases of *Capsicum* species in the warm North and Northeast regions of Brazil. With the substantial increase of sweet pepper production under plastic houses in the last decade, wilt has emerged also in other regions, especially in the central and southeastern states, where this cropping system constitutes a significant share of the fresh sweet pepper market. In order to find sources of resistance to bacterial wilt aiming at the development of populations with multiple disease resistance, 385 accessions of Embrapa's *Capsicum* germplasm collection were evaluated for wilt resistance. Since 1998, in four experiments, 284 genotypes of *C. annuum*, 26 of *C. frutescens*, 41 of *C. baccatum* and 34 of *C. chinense* were tested. The experiments were conducted in Brasilia, DF, in a greenhouse with temperatures ranging from 20 to 40°C. Plants were inoculated at the second leaf stage by immersing their roots in a bacterial suspension (10^8cfu/ml) for approximately one minute. Inoculated plants were immediately transplanted to 0.5 L pots of sterile soil. Fifteen plants of each genotype, in three randomised blocks, were inoculated either with biovar I (isolate CNPH 190) or biovar III (isolate CNPH 34) of the bacterium. These isolates were previously selected as highly virulent to *Capsicum annuum*. Genotypes 'Magda' and 'MC-4' were used as susceptible and resistant controls, respectively. Disease was assessed weekly or more frequently, depending on the rate of the disease development on a scale from 1 to 5, where 1 is no disease and 5 is a completely wilted plant. It was found that 27 (9.5%); 6 (17.6%); 5 (12.2%) and 2 (7.7%) of *C. annuum*, *C. baccatum*, *C. chinense* and *C. frutecens*, respectively, were in the same group as the resistant control for at least one bacterial isolate, based on the Scott-Knott test (0.05) In general, the disease indexes of the selected genotypes were between 1 and 2 on the scale, compared with values of 4 to 5 for the susceptible control. The best genotypes were selected to be challenged with other isolates of the pathogen in a single experiment which will determine if the resistance is biovar- or isolate-specific, selecting those with broader resistance. The biovar III isolate consistently yielded more reliable results in the experiments because of its higher virulence, therefore allowing fewer escapes than the isolate of biovar I. Most of the resistant genotypes were resistant to both isolates. In a parallel trial, it was found that five isolates of biovar III killed 100% of the susceptible control 'Magda', while the biovar I isolates killed 68%, 38%, 50%, 73% and 84% of control plants. Thus, though isolates vary, regardless of biovar, there is a tendency for isolates of biovar III be more virulent on peppers than isolates of biovar I. When the same ten isolates were inoculated to the resistant control 'MC-4' they failed to induce disease, indicating that this genotype is an excellent wide-spectrum source of resistance to bacterial wilt.