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DEVELOPMENT AND APPLICATION OF A CAPS MARKER (PHYTO) LINKED TO THE PC5.1 LOCUS CONFERRING RESISTANCE TO PHYTOPHTHORA CAPSICI IN PEPPER (CAPSICUM ANNUM L.)

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Phytophthora capsici causes destructive disease in several crop species, including

pepper (Capsicum annuum L.). Resistance in this species is physiologically and genetically

complex due to the presence of many P. capsici virulence phenotypes, and different QTLs and R

genes among the identified resistance sources. Several primer pairs were designed to follow a

SNP (G/A) within the CA_011264 locus, linked to the Pc5.1 locus. All primer pairs were designed

on DNA sequences derived from CaDMR1, a homoserine kinase (HSK), which is a gene

candidate responsible for the major QTL on chromosome P5 for resistance to P. capsici. A panel

of 69 pepper genotypes from the Southern Seed germplasm collection was used to screen the

primer pairs designed. Of these, two primers (Phyto_for_2 and Phyto_rev_2)

surrounding the SNP

proved successful in discriminating susceptible and resistant genotypes when combined with a

restriction enzyme (BtgI). This new marker (called Phyto) worked as expected in all genotypes

tested, proving to be an excellent candidate for marker-assisted selection in breeding programs

aimed at introgression of the resistant locus into pure lines.