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Ketahanan 22 Genotipe Cabai (Capsicum spp.) terhadap Phytophthora capsici Leonian dan Keragaman Genetiknya

Resistance of 22 Pepper Genotypes (Capsicum spp.) to Phytophthora capsici Leonian and their Genetic Diversity

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ABSTRACT

Laboratory and field experiments were carried out to analyze genetic diversity of 22 pepper genotypes (Capsicum spp.) and their resistance to Phytophthora capsici Leonian. Resistance screening was performed in plastic flats 72 cells. Inoculation was done on 28-day old pepper plant soon after watering by pipeting 5 ml of inoculum (10^5 zoospore/ml) at the base of each plant. P. capsici isolate used in this experiment was TG01, identified as race 3 based on AVRDC differential pepper lines (PI 188478, PBC 602, PBC 137 and Early Calwonder). The evaluation of pepper genotypes characteristic was conducted in the field. Principle Component Analysis, Clustering Analysis and Biplot Analysis were used to analyze genetic diversity based on 37 characters. Result of resistance evaluation showed that two genotypes (C4 and C13) were identified as resistant, 7 genotypes (C2, C3, C5, C8, C10, C15, and C20) as slightly resistant, 6 genotypes (C7, C9, C17, C19, C21 and C27) as slightly susceptible, and 7 genotypes (C1, C11, C18, C28, C48, C64, and C65) as susceptible. Based on genetic diversity analyzed, all genotypes could be divided into 4 clusters. Cluster I consisted of 18 genotypes i.e. C1, C2, C3, C4, C5, C7, C8, C9, C10, C13, C14, C15, C17, C18, C19, C28, C64, and C65. Cluster II consisted of only 1 genotype i.e. C48. Cluster III consisted of 2 genotypes (C20 and C21) which were characterized by the colour of corolla, corolla spot, and filament. Cluster IV consisted of 1 genotype (C27) which was characterized by fruit cross-sectional corrugation.

Key words : Capsicum, resistance, Phytophthora capsici, genetic diversity, clustering.

PENDAHULUAN

Cabai (Capsicum sp L.) merupakan salah satu komoditas sayuran penting dan bernilai ekonomi tinggi. Tanaman cabai di Indonesia banyak dikembangkan di dataran rendah maupun dataran tinggi. Walaupun demikian, produktivitas cabai di Indonesia masih tergolong rendah. Serangan hama dan penyakit menjadi salah satu penyebab rendahnya produktivitas tersebut (Sudarwohadi, 1995; Bosland dan Votava, 1999).

Salah satu cendawan penyebab penyakit yang dominan pada pertanaman cabai adalah Phytophthora capsici L (Kurt dan Emir, 2004; Demirci dan Dolar, 2006). Patogen ini menyebar dan menimbulkan permasalahan pada tanaman cabai di seluruh dunia (Chaudhary et al., 1995; Cerkauskas, 2004). Dilaporkan kehilangan hasil akibat serangan P. capsici di Turki mencapai lebih dari 40% (Yildiz dan Delen, 1980). Di Indonesia, serangan cendawan ini telah menghancurkan lebih dari 60% areal pertanaman cabai petani di Tegal (Dr. Widodo, 2007)[1)].

Cendawan P.capsici menyerang cabai pada setiap fase dan bagian tanaman (Pernezny dan Momol, 2006). Serangan pada fase bibit dapat menyebabkan kematian. Pada tanaman dewasa serangan cendawan ini menyebabkan gejala busuk akar, kanker batang, hawar daun dan busuk buah (Demirci dan Dolar, 2006). Tanaman yang terserang akan mendadak layu dan mengalami kematian (Sherf dan MacNab, 1986).

Patogen ini bersifat polisiklik, merupakan patogen tular tanah dan terbawa benih (Ristaino dan Johnston, 1999), memiliki kisaran inang yang luas sehingga menjadi sulit dikendalikan (Demirci dan Dolar, 2006), dan pada areal yang telah terinfestasi, cendawan ini tetap viabel hingga 8 tahun (Chaudry et al., 1995). Penyebaran penyakit dapat terjadi melalui angin, hujan

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