

KARAKTERISASI DAN HUBUNGAN KEKERABATAN CABAI RAWIT (*Capsicum frutescens* L.) GENERASI M3 HASIL IRADIASI SINAR GAMMA

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ABSTRAK

Cabai rawit (*Capsicum frutescens* L.) merupakan komoditas hortikultura yang memiliki nilai ekonomi tinggi di Indonesia, tetapi masih mengalami fluktuasi produksi. Salah satu upaya peningkatan produksi adalah melalui pemuliaan mutasi menggunakan iradiasi sinar gamma. Penelitian ini bertujuan mengidentifikasi keragaman karakter kualitatif dan kuantitatif, menganalisis nilai heritabilitas, serta menentukan pola pengelompokan dan hubungan kekerabatan genotipe cabai rawit generasi M3 hasil iradiasi sinar gamma. Penelitian dilaksanakan di Kebun Percobaan Wedomartani, Fakultas Pertanian UPN Veteran Yogyakarta pada bulan November 2025 hingga Maret 2026. Keragaman karakter kualitatif hanya dijumpai pada karakter gelombang tepi daun dan lekukan keriting buah. Keragaman karakter kuantitatif ditunjukkan oleh perbedaan nyata pada karakter tinggi dikotomus, lebar tajuk, panjang daun, lebar daun, bobot per buah, jumlah buah per tanaman, dan bobot buah per tanaman. Heritabilitas arti luas kategori tinggi dijumpai pada karakter tinggi dikotomus, lebar daun, dan jumlah buah per tanaman. Analisis kluster UPGMA membentuk dua kluster, yaitu kluster I (G3, G4, G5, dan G6) dan kluster II (G1, G2, G7, G8, dan G9) dengan nilai koefisien similaritas berkisar 0,64–1,00. Genotipe G5 (KL5-164-95) berpotensi dilanjutkan ke generasi M4 karena memiliki jumlah buah per tanaman dan bobot buah per tanaman tertinggi.

Kata Kunci: cabai rawit, heritabilitas, hubungan kekerabatan, mutasi sinar gamma

CHARACTERIZATION AND RELATIONSHIP OF RAWIT CHILLI PEPPERS (*Capsicum frutescens* L.) M3 GENERATION RESULTS OF GAMMA RAY IRRADIATION

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ABSTRACT

Chili paper (*Capsicum frutescens* L.) is a horticultural commodity that holds high economic value in Indonesia, yet its production remains subject to fluctuations. One approach to increasing production is through mutation breeding using gamma-ray irradiation. This study aims to identify the diversity of qualitative and quantitative traits, analyze heritability values, and determine the clustering patterns and genetic relationships among M3-generation bird's eye chili genotypes resulting from gamma-ray irradiation. The study was conducted at the Wedomartani Experimental Farm, Faculty of Agriculture, UPN Veteran Yogyakarta, from November 2025 through March 2026. Variation in qualitative traits was found only in leaf margin waviness and fruit curl. Variation in quantitative traits was indicated by significant differences in the traits of dichotomous height, canopy width, leaf length, leaf width, weight per fruit, number of fruits per plant, and fruit weight per plant. High broad-sense heritability was found for the traits of dichotomous height, leaf width, and number of fruits per plant. UPGMA cluster analysis formed two clusters: Cluster I (G3, G4, G5, and G6) and Cluster II (G1, G2, G7, G8, and G9) with similarity coefficients ranging from 0.64 to 1.00. Genotype G5 (KL5-164-95) has the potential to be advanced to the M4 generation because it has the highest number of fruits per plant and fruit weight per plant Translated with DeepL.com (free version)

Keywords: *chili pepper, heritability, genetic relationship, gamma-ray mutation.*