INDUK SI MUTASI FISIK MELALUI IRADIASI SINAR GAMMA TERHADAP PERTUMBUHAN, HASIL, DAN MORFOLOGI BEBERAPA VARIETAS TANAMAN BUNGA MATAHARI (*Helianthus annuus* L.) M1

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ABSTRAK

Bunga matahari memiliki keterbatasan variasi genetik pada populasi yang dibudidayakan di Indonesia. Upaya peningkatan variasi genetik dapat dilakukan perakitan varietas unggul melalui mutasi sinar gamma. Penelitian ini bertujuan untuk mengetahui pengaruh iradiasi sinar gamma terhadap pertumbuhan, hasil, dan morfologi varietas tanaman bunga matahari. Penelitian ini dilakukan di Badan Tenaga Atom Indonesia, Jakarta, dan greenhouse di Sleman, Yogyakarta. Penelitian ini menggunakan metode Rancangan Acak Lengap (RAL) dua faktor dan tiga ulangan. Faktor pertama perlakuan varietas Vanilla Ice, Velvet Queen, dan Kanigara IPB. Faktor kedua yaitu iradiasi sinar gamma 0 Gy, 100 Gy, 200 Gy, 300 Gy. Data dianalisis menggunakan *Analisis of Variance* (ANOVA) taraf 5%, dilanjutkan dengan Uji *HSD-Tukey* ($P<0,05$). Kombinasi perlakuan V3D1 menunjukkan interaksi terhadap daya berkecambah, diameter batang, panjang biji, jumlah biji dan bobot biji. Dosis 100 Gy memberikan hasil terbaik terhadap tinggi tanaman, diameter batang, jumlah daun, diameter bunga tabung, panjang bunga pita, dan lebar biji. Varietas Velvet Queen memberikan hasil terbaik terhadap tinggi tanaman, diameter batang dan jumlah daun. Nilai LD 50 Vanilla Ice yaitu 379,32 Gy, Velvet Queen yaitu 250,41 Gy, dan Kanigara IPB yaitu 244.23 Gy. Terdapat 11 nomor mutan hasil iradiasi sinar gamma.

***Kata kunci**: Bunga Matahari, Mutasi, Iradiasi Sinar Gamma*

PHYSICAL MUTATION INDUCTION THROUGH GAMMA RAYS IRRADIATION ON THE GROWTH, YIELD, AND MORPHOLOGICAL CHANGES OF SEVERAL VARIETIES OF SUNFLOWER PLANT (*Helianthus annuus* L.) M1

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ABSTRACT

Sunflower has limited genetic variation in cultivated populations in Indonesia. Efforts to increase genetic variation can be done by developing superior varieties through gamma-ray mutation. This study aims to determine the effect of gamma-ray irradiation on the growth, yield, and morphology of sunflower plant varieties. This study was conducted at the Indonesian Atomic Energy Agency, Jakarta, and a greenhouse in Sleman, Yogyakarta. This study used a completely randomized design (CRD) method with two factors and three replications. The first factor was the treatment of Vanilla Ice, Velvet Queen, and Kanigara IPB varieties. The second factor was gamma-ray irradiation of 0 Gy, 100 Gy, 200 Gy, and 300 Gy. Data were analyzed using Analysis of Variance (ANOVA) at a 5% level, followed by the HSD-Tukey test ($P < 0.05$). The combination of V3D1 treatments showed an interaction on germination, stem diameter, seed length, number of seeds, and seed weight. A dose of 100 Gy gave the best results on plant height, stem diameter, number of leaves, diameter of tubular flowers, length of ribbon flowers, and seed width. The Velvet Queen variety produced the best results in terms of plant height, stem diameter, and leaf number. The LD50 value for Vanilla Ice was 379.32 Gy, for Velvet Queen it was 250.41 Gy, and for Kanigara IPB it was 244.23 Gy. Eleven mutants emerged from gamma ray irradiation.

***Keywords*:** *Sunflower, Mutation, Gamma Ray Irradiation*