

INDUKSI IRADIASI SINAR GAMMA TERHADAP PERTUMBUHAN DAN HASIL TANAMAN KACANG HIJAU (*Vigna radiata* L.) VARIETAS VIMIL 2

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ABSTRAK

Kacang hijau (*Vigna radiata* L.) varietas Vimil 2 cenderung mengalami penurunan produktivitas. Salah satu upaya untuk meningkatkan produktivitasnya adalah melalui perakitan varietas unggul menggunakan teknik pemuliaan mutasi dengan iradiasi sinar gamma. Penelitian ini bertujuan untuk mengetahui pengaruh induksi iradiasi sinar gamma terhadap pertumbuhan dan hasil kacang hijau varietas Vimil 2 dan mendapatkan dosis iradiasi sinar gamma yang menyebabkan *Lethal Dose* 50 (LD50). Penelitian menggunakan Rancangan Acak Lengkap (RAL) satu faktor dengan sembilan taraf dosis sinar gamma, yaitu 0 Gy sebagai kontrol, 100 Gy, 200 Gy, 300 Gy, 400 Gy, 500 Gy, 600 Gy, 700 Gy, dan 800 Gy, masing-masing diulang tiga kali sehingga diperoleh 27 unit percobaan. Data dianalisis menggunakan *Analysis of Variance* (ANOVA) taraf 5% dan dilanjutkan dengan Uji *Duncan's Multiple Range Test* (DMRT) taraf 5%. Penentuan LD50 dilakukan menggunakan *software curve expert*. Hasil penelitian menunjukkan bahwa iradiasi sinar gamma berpengaruh nyata terhadap pertumbuhan dan hasil kacang hijau varietas Vimil 2. Radiasi sinar gamma dosis 100 Gy dapat meningkatkan daya berkecambah, tinggi tanaman umur 10, 20, dan 30 HST, umur muncul bunga, jumlah polong per tanaman, jumlah biji per tanaman, jumlah biji per polong, dan bobot biji per tanaman. Radiasi sinar gamma dosis 541,075 Gy menyebabkan kematian 50% tanaman (LD50) pada varietas Vimil 2.

Kata kunci: Kacang Hijau, Mutasi, Sinar Gamma

INDUCTION OF GAMMA-RAY IRRADIATION ON THE GROWTH AND YIELD OF MUNG BEAN (*VIGNA RADIATA* L.) VIMIL 2 VARIETY

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ABSTRACT

The Vimil 2 variety of mung bean (*Vigna radiata* L.) tends to experience a decline in productivity. One effort to increase its productivity is through the breeding of superior varieties using mutation breeding techniques with gamma ray irradiation. This study aimed to determine the effect of gamma ray irradiation induction on the growth and yield of mung bean Vimil 2 variety and to identify the gamma-ray irradiation dose that causes a Lethal Dose 50 (LD50). The research used a one-factor Completely Randomized Design (CRD) with nine levels of gamma ray dosage: 0 Gy (control), 100 Gy, 200 Gy, 300 Gy, 400 Gy, 500 Gy, 600 Gy, 700 Gy, and 800 Gy. Each treatment was replicated three times, resulting in 27 experimental units. Data were analyzed using Analysis of Variance (ANOVA) at a 5% significance level, followed by Duncan's Multiple Range Test (DMRT) at a 5% significance level. The determination of LD50 was performed using *software curve expert*. The results showed that gamma ray irradiation had a significant effect on the growth and yield of mung bean Vimil 2 variety. A gamma ray dose of 100 Gy was able to improve germination rate, plant height at 10, 20, and 30 days after sowing (DAS), flowering age, number of pods per plant, number of seeds per plant, number of seeds per pod, and seed weight per plant. A gamma ray dose of 541,075 Gy caused 50% plant mortality (LD50) in the Vimil 2 variety.

Keywords: *Mung Bean, Mutation, Gamma Ray*