

# **The Effect of Gamma Ray Irradiation on the Growth of Yellow Lumbu and Green Lumbu (*Allium Sativum L.*) Garlic Varieties in the Lowland**

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## **ABSTRACT**

Garlic is a type of horticultural commodity that has important meaning in Indonesia. Garlic propagation uses vegetative cultivation techniques so that the genetic diversity of this plant is very narrow. Apart from that, the area for garlic production is still considered very limited while the demand for garlic is high. Garlic production in Indonesia in 2022 will decrease by 33% compared to 2021. The aim of this research is to determine the effect of Cobalt-60 gamma ray irradiation on the growth of two local varieties of garlic in the lowlands. The research used the Split Plot method with two factors, namely variety and irradiation dose with 3 repetitions. The varieties used are Lumbu Kuning and Lumbu Hijau. The treatment doses were garlic bulbs without irradiation, 2 Gy, 4 Gy, 6 Gy, 8 Gy and 10 Gy so there were 36 experimental units. Each experimental unit contained 10 plants. The data obtained were analyzed using analysis of variance (ANOVA). Further tests were carried out *Duncan's Multiple Range Test* (DMRT) and *trend comparison*. The results showed that a gamma ray irradiation dose of 7.85 Gy caused the death of 50% of the population (LD50) of the Yellow Lumbu variety and a dose of 7.26 Gy caused the death of 50% of the population (LD50) of the Green Lumbu variety and the optimum dose was 1-3 Gy.

**Keywords :** *Garlic, Mutation, Gamma Ray Irradiation, Lethal Dose 50*