

**RESPONSE OF AGRONOMIC CHARACTERISTICS OF SOYBEAN
(*Glycine max* L.) DENA-2 VARIETY ON COBALT-60 GAMMA RAY
IRRADIATION**

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ABSTRACT

Domestic soybean production in 2022 can only fulfil 10% of national needs. Mutation breeding through gamma ray irradiation is one way to produce new varieties. The aim of this research was to determine the trend of gamma ray dose, lethal dose 50, and the best gamma ray irradiation dose on the agronomic characteristics of soybeans. The Dena 2 soybean variety has the advantage of being resistant to several pests and diseases but has low yield potential. This research used a Completely Randomized Design method for germination testing and a Completely Randomized Block Design for field testing with a single factor and three replications. The treatments used were gamma irradiation doses of 0 Gy, 100 Gy, 200 Gy, 300 Gy, 400 Gy, 500 Gy, 600 Gy, 700 Gy, and 800 Gy so there were 27 experimental units. The observation data were analyzed using analysis of variance (ANOVA) at the 5% level and continued with Duncan's Multiple Range Test (DMRT) and Trend Comparison. The results showed that gamma ray irradiation at dose of 115.5 Gy produced the highest germination capacity, dose of 110.5 Gy produced the highest percent of full pods, dose of 105.5 Gy produced the lowest percent of empty pods, dose of 107.5 Gy produced a pod weight per the tallest plants, dose of 96.8 Gy produced the highest seed weight, and dose of 128.33 Gy produced the highest weight of 100 seeds. Dose of 582.43 Gy caused death in 50% of the population (LD50).

Kata kunci : Soybean, Mutation Breeding, Gamma Ray Irradiation, Lethal Dose 50