

The Effect of Cobalt-60 Gamma Ray Irradiation on the Quality of Melon Sweet D25 (*Cucumis melo* L.)

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ABSTRACT

Efforts to increase melon production are accompanied by improvements in melon quality. Through plant breeding activities, it is hoped that we will be able to produce the melon varieties that farmers want, namely melons with a sweet taste and large fruit size. So it is necessary to develop the quality of Sweet D25 melons through mutation breeding. The aim of the research was to determine the trend of gamma ray dose, LD50, and the best gamma ray irradiation dose for melon plants. The research used a Complete Randomized Block Design (RAKL) method with a single factor and three replications. The treatment used was melon seeds without exposure to gamma radiation, doses of 100Gy, 200Gy, 300Gy, 400Gy, 500Gy, 600 Gy, 700Gy, and 800Gy so there were 27 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 gamma irradiation caused a negative linear response to the observed variables of plant height, stem diameter and fruit diameter. Gamma ray irradiation causes a quadratic response to the variables of maximum growth potential, plant fruitweight, and fruit flesh thickness. A gamma ray irradiation dose of 1059.6 Gy caused 50% death in the population (LD50). A gamma ray irradiation dose of 217 Gy produces the best maximum growth potential, a gamma ray irradiation dose of 69.44 Gy produces the best planted fruit weight, a gamma ray irradiation dose of 200 Gy produces the best fruit flesh thickness.

Keywords : *melon, mutation, gamma rays*