

**DETERMINATION OF LETHAL DOSE 50 (LD<sub>50</sub>) VALUE OF <sup>60</sup>CO  
GAMMA IRRADIATION FOR TOMATO (*Lycopersicon esculentum*  
Mill.) VARIETY THILINA**

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by

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## ABSTRACT

Mutation breeding is one of promising method to create genetic variations and to produce new varieties. Gamma irradiation is a physical mutagen which can be used to induce mutations. Lethal Dose 50 value is essential in mutation breeding for a specific crop to determine the optimum irradiation dose required to create a mutation. The purpose of this research was to identify the dose of gamma irradiation of LD<sub>50</sub> for seeds of Tomato (*Lycopersicon esculentum* Mill.) var. Thilina. Tomato seeds were subjected to different doses of gamma rays (0, 50, 125, 200, 275 and 350 Gy) with Cobalt 60 irradiation source and seeds were sowed. Characteristics of irradiated plants, germination percentage on 5<sup>th</sup>, 7<sup>th</sup> and 14<sup>th</sup> days, height of the plants on 12<sup>th</sup>, 15<sup>th</sup>, and 18<sup>th</sup> days after seed sowing, and growth rates were measured. Significant differences of treatments were observed only in germination percentage on 5<sup>th</sup> day and plant height on 12<sup>th</sup> day after seed sowing. Germination percentages on 7<sup>th</sup> and 14<sup>th</sup> days and heights of the plants on 15<sup>th</sup> and 18<sup>th</sup> days after seed sowing did not show any significant differences. Delay in germination of seeds was observed in early stages at 275 Gy. Seeds showed near 90% viability. All germinated plants showed significant variation in plant height in first few days of seedling emergence, and revealed that effect of gamma irradiation presented only in early stage and in later stage all plants showed similar performances. The lethal dose 50 value of tomato cultivar Thilina does not exist within 0 to 350 Gy gamma irradiation range and it is not an adequate irradiation range to induce any morphological changes.

**Keywords:** Gamma Irradiation, Tomato, Lethal Dose 50, Mutation, Cobolt-60