Contribution ID: **100** Type: **Poster**

MUNGBEAN RADIOSENSITIVITY TEST TO GAMMA IRRADIATION FOR MUTATION BREEDING IN MUNGBEAN

The first stage of plant breeding program by induced mutation technique using gamma rays is to determine the optimum dose for the bulk irradiation treatment as radiosensitivity varies with species, varieties, and genotypes. Therefore, the objective of this research was to determine the gamma ray dose which reduces growth by 50% (GR50) in four mungbean varieties. The trial was conducted at the Joint FAO/IAEA Plant Breeding and Genetics Laboratory, Seibersdorf, Austria. Genetically sound seeds of 4 mungbean varieties: Bino 2, Bino 5, Bino 7 and Bino 8 with a good germination rate and whose moisture has been equilibrated were subjected to gamma rays with the following doses: 0, 75Gy, 150Gy, 300Gy, 450GY and 600Gy and planted in a RCB design with three replicates. Data were recorded for germination percentage, survival percentage at 15 days after seed sowing, chlorophyll mutation, leaf mutation, variation in plant height (at 21 days and 30 days) and in the number of leaves. Except mungbean variety Bino 7, the other three varieties showed significant reduction of seed germination with increasing doses. Numbers of days to seed germination appeared also to increase when irradiated with higher doses (450Gy and 600Gy) and significant variation was observed among varieties. Variety Bino 2 showed a two-fold shorter duration for seed germination at 600Gy compared to the non-irradiated control. Survival rate of the varieties were drastically reduced with increasing doses after 300Gy. Significant effects on plant height were observed with 600Gy dose in all varieties. Higher chlorophyll and leaf abnormalities were also observed in higher doses. Hundred percent leaf variegation was observed with 600Gy dose irradiation in all varieties. Growth reduction dose was determined by calculating plant height reduction as compared to the non-treated control. The highest GR50 value (523Gy) was observed in variety Bino 8 and the lowest value (484Gy) was observed in Bino 5. LD30 was around 300Gy-310Gy in all varieties.

Country or International Organization

Sri Lanka

Author: Mrs KUMARARATHNA, Munasingha Jayasundara Mudiyanselage Priyanthi (Department of Agriculture)

Co-author: Dr MUKHTAR ALI GHANIM, Abdelbagi (INTERNATIONAL ATOMIC ENERGY AGENCY)

Presenter: Mrs KUMARARATHNA, Munasingha Jayasundara Mudiyanselage Priyanthi (Department of Agriculture)

Track Classification: Enhancing agricultural biodiversity through new mutation induction techniques