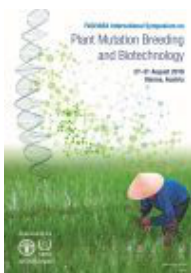


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DEVELOPMENT OF HIGH YIELDING AND LARGE SEED MUTANTS OF TROMBAY GROUNDNUT (*ARACHIS HYPOGAEA* L.). USING ELECTRON BEAM IRRADIATION

Electron beam accelerators have been used as radiation sources for a variety of industrial and biological applications. Such a facility has been used for mutation breeding experiments involving improvement of agronomic traits in groundnut (*Arachis hypogaea* L.). A 10 MeV linear accelerator facility was used for seed irradiation and standardized for low dose application (0.1 to 1 kGy) in pulse mode using un-scanned scattered beam. A linear dose response was found for the growth reduction of seedlings of irradiated M1 plants in five groundnut genotypes (TAG 24, TG 26, TG 51, TG 68 & TG 69). Significant genotypic differences were observed (probit and ANOVA analysis) for seedling height reduction for different electron beam dose treatments. Among these genotypes, TAG 24, TG 26 and TG 68 showed the same GR50 value (240 Gy) followed by TG 69 (175 Gy) and TG 51 (111 Gy) to electron beam. After the dose standardization for each genotype, TG 26 and TG 68 were irradiated with 150 Gy, 200 Gy and 250 Gy of electron beam for improving their yield contributing traits. From the mutagenized population of TG 26, two high yielding mutants (one with large seed) were isolated. Another four high yielding mutants, a disease mimic leaf mutant and a small leaflet mutant were isolated from TG 68 electron beam irradiated population. These high yielding mutants were field evaluated and exhibited significant higher yield compared to their parents and check varieties.

Country or International Organization

Bhabha Atomic Research Centre, Mumbai, India

Author: Dr MONDAL, Suwendu (Bhabha Atomic Research Centre, Mumbai, India)

Co-authors: Dr BADIGANNAVAR, Anand (NABTD, BARC, Mumbai); Mrs BHAD, Poonam (Bhabha Atomic Research Centre, Mumbai, India)

Presenter: Dr MONDAL, Suwendu (Bhabha Atomic Research Centre, Mumbai, India)

Track Classification: Enhancing agricultural biodiversity through new mutation induction techniques