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DETERMINATION OF RADIOSENSITIVITY OF COFFEA ARABICA VAR. VENECIA SEEDS TO GAMMA RAY IRRADIATION

Coffee is one of the most commercially available raw materials, being the tropical product with the highest marketing value in the world. In Costa Rica it is the third most important product for agricultural sector exports and provides the main income for many families in the country. However, coffee is under threat due to the Coffee Leaf Rust disease (CLR). Mutation breeding in coffee a promising approach to develop new varieties resistant to CLR. As the technology is new for coffee, basic tests related to mutation induction need to be done. The plant material used were *Coffea arabica* var. Venecia seeds, with a humidity of 27,3%. The applied irradiation doses were 0, 80, 100, 120, 140, 160 and 180 Gy. For each treatment, three replicates of 200 g were used. The irradiated seeds were planted on the same day. Eighty days after treatment the number of seedlings was quantified, the hypocotyl height and radicle length were measured, and the opening of cotyledons was determined for each dose. The figure 1 shows the effect of increasing radiation doses on seed germination, whereas seedling growth was not affected. However, a delay in opening of the cotyledons was observed at higher doses. This radiosensitivity test based on seed germination as compared to unirradiated control revealed that the LD50 for the used variety is 127,8 Gy. This dose will be used for further bulk experiments aimed. The results show the lethal dose (DL50) in 127,8 Gy, for the establishment parameters, being an advance to continue with measurements of genetic and phenotypical parameters to go forward on coffee breeding programs looking for new sources to resistance against CLR.

Country or International Organization

Costa Rica-Coffee Center Research-Coffee Institute-Technology Institute

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Track Classification: Enhancing agricultural biodiversity through new mutation induction techniques