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GENETIC VARIABILITY INDUCTION IN RICE THROUGH MUTAGENESIS: AN ALTERNATIVE TO MITIGATE CLIMATE CHANGE AND PROMOTE FOOD SECURITY IN COSTA RICA

Rice is a cereal of great nutritional importance in Costa Rica and is mainly cultivated in areas that are prone to accumulate salts due to a combination of bad agricultural practices, climatic conditions, such as low rainfall soil erosion and poor drainage. One alternative to solve this problem is through the genetic improvement of rice, e.g. by induced mutagenesis. Rice seeds and embryogenic calli were irradiated with different doses (0, 20, 40, 60, 80, and 100 Gy) from a cobalt-60 gamma radiation source. As the radiation dose increased, the induction, survival and regeneration of embryogenic calli decreased compared to the non-treated controls. Moreover, the oxidation of embryogenic calli increased as the gamma dose increased. Embryogenic calli irradiated with 40 and 60 Gy were cultured on selective media supplemented with NaCl. The results showed that 150 mM NaCl could be used as an initial screen prior to field testing. Screening of mutant plants against drought tolerance and the disease organism *Pyricularia oryzae* (sexual morph *Magnaporthe oryzae*) is planned. Moreover, a molecular characterization of the rice mutants obtained will be carried out to detection mutations at the DNA level. Rice breeding programmes aim to use mutagenesis combined with screening methods and molecular markers to accelerate the development of mutant varieties.

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