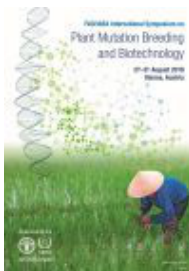


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MUTATION INDUCTION AND GENOME EDITING IN PLANT BREEDING: COMPARATIVE ADVANTAGES AND PERSPECTIVES

Genome editing has emerged as a powerful tool in plant breeding in recent years, with a trend to replace the 'old' technique of mutation induction. Here, we will review the molecular genetic features of mutations induced by through classical (chemical and physical) mutagenesis and (genome editing based) targeted mutagenesis, the procedures and applicability of these two approaches in different plant species, and based on these findings, discuss their comparative advantages in the context of plant breeding (with the aim of breeding and commercializing new cultivars at lowest costs). While genome editing has its advantages, mutation induction using physical and chemical mutagens still has its own uniqueness (and thus irreplaceable by genome editing) and even has advantages over genome editing for certain traits. Hence, classical mutagenesis can still be a useful tool for plant breeding and genetics, particularly when it is applied properly and together with other molecular techniques.

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