

# FAO/IAEA International Symposium on Plant Mutation Breeding and Biotechnology



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## POLLEN GRAIN CHARACTERS – A USEFUL PARAMETER FOR TESTING RADIO-SENSITIVITY AND CHARACTERIZATION OF MUTANTS

Determination of radio-sensitivity is pre-requisite for large scale irradiation in mutation induction for breeding experiments and a wide range of parameters (growth inhibition, chromosomal aberrations, mutation etc.) have already been standardized. Appreciable amounts of literature have been accumulated on pollen grains after mutagen treatment. Pollen grains and their morphological features are genetically stable characters and the effects of mutagens on these features have been studied critically on different ornamental plants (canna, chrysanthemum, mesembryanthemum, Narcissus tazetta, Lantana depressa etc.) and other crops (Trichosanthes anguina, T. cucurmarina, Cucurbita maxima, Cephalaria indica etc.). Changes in pollen grain sterility, size and morphology (ornamentations) were significant after mutagen treatment. Increase in pollen grain sterility after mutagen treatment was observed in all the experimental materials. The responses to irradiation with regard to pollen sterility/fertility appeared to be plant specific and may be the outcome of the mode of chance mutation in different plants. Apertural character and exine ornamentation pattern are the two most stable morphological features of pollen to be considered for diagnostic value of a taxa. Palynological characters are often found helpful for assessing taxonomic treatments, not only for delimitation of higher taxonomical grouping like genus or species, but also for providing additional parameters for differentiation of microtaxa as low as cultivar level. Differential conspicuous changes in exine and apertural characters were recorded both after gamma irradiation and in mutants. Significant changes in pollen apertural and exine surface sculptures due to mutation at several independent loci controlling these characters and their differential sensitivity to mutagens have been clearly established. Such study will provide additional information for understanding the genetic control over pollen aperture and exine surface ornamentation which are of potential as markers in plant biosystematics.

### Country or International Organization

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