



Gamma-irradiated pollen induces the formation of $2n$ endosperm and abnormal embryo development in European plum (*Prunus domestica* L., cv. “Rainha Cláudia Verde”)

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Summary

The effect of gamma radiation on pollen germination capacity and pollen tube growth was evaluated in vitro and in situ conditions. In vitro experiments, revealed that radiation significantly affects pollen viability, mainly for levels higher than 200 Grays (Gy). Also, for levels higher than 200 Gy, in situ observations showed that no pollen tube reached the ovule. Fruit set results confirmed that for irradiation levels higher than 200 Gy, all fruits dropped before 90 days after pollination (DAP). Most of the seeds obtained from 200 Gy pollination treatments were empty. Other seeds contained only endosperm or endosperm and embryos with abnormal development. For those seeds, flow cytometry analysis revealed sometimes the presence of a $2n$ endosperm, indicating that double fertilization did not occur and leading to the possibility of haploid embryo formation.