

Effect of Different Gamma Rays Doses on Pollen Grain Germination Rate and Pollen Tube Growth in Cantaloupe Hybrids

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Pollen germination time and its speed play an important role in the formation of fruit. In fact, with a rapid germination at a proper time that the ovary has grown enough for inoculation, the percentage of the fruitsets can be increased. A mixture of gamma-irradiated pollen grains of 6 cantaloupe hybrids were examined. Pollen tube length and pollen grain germination rate which have direct effect on stimulation of egg cells and development of parthenocarpic embryos have been studied in this research. Parthenogenesis is considered one of the most effective methods of accessing haploid plants in melons. Pollens were obtained on germination medium (10.25% sucrose, 0.031% calcium nitrate, 0.015% boric acid, 0.0075% KNO3, and 0.016% MgSO4) at 25 °C in 3 techniques. As a new achievement in simplification of pollen grains separation, pentane was poured directly on the medium. After evaporation, pollen grains were easily remained on the culture medium. Pollen germination rate and pollen tube growth increased dramatically after raising the dose from 300 Gy to 500 Gy by Cobalt 60. In an equal timespan, the pollen tube growth and pollen grain germination rate in 500 Gy were higher than the 300 Gy. Similar validating results gained in vivo.