

ZYGOTIC EMBRYO CULTURE AND MUTATION BREEDING IN AVOCADO (*PERSEA AMERICANA* MILL)

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Mutation induction and biotechnological techniques are current approaches used in plant breeding. At present work, both methodologies were combined in order to obtain a mutation-breeding model in avocado. *In vitro* germination and rooting of zygotic embryos, sprout multiplication and plantlets adaptation in Cuban avocado varieties were studied. Percentage of germinated entire embryos were higher using mature than immature embryos. Near of 80 % of entire plantlets obtained by embryo culture technique were adapted to greenhouse conditions.

Based on inhibition of entire sprout fraction, radiosensitivity curves for Duke and Hass varieties were developed. Inhibition of entire sprout fraction was described by a second order polynomial equation. Fit of experimental data and theoretical model was equal to 0.96 and 0.94 for Hass and Duke radiosensitivity curves, respectively. LD₅₀ values defined as the dose, at which the 50 % of entire sprout fraction are inhibited, were determined in 27 and 28 Gy for Hass and Duke varieties, respectively. Gamma-rays mutagenic doses for zygotic embryos of both varieties were also established between 19 and 25 Gy. Seedling height, diameter of seedling neck, leaves number and lengths of principal root were used as morphological descriptors to evaluate the effect of g-rays mutagenic dose on plantlets health. Applied mutagenic dose did not affect significantly plantlets development. However, leaf and root anomalies, atrophied and chlorophyll-deficient shoots and albinism were observed at doses higher than LD₅₀ values.

The usefulness of the combined approach to improve avocado varieties was discussed. This *in vitro* methodology appears as an alternative to traditional breeding methods, particularly for improving agronomic characteristics as rot-root resistance and salt tolerance in avocado.