

JUVENILITY AND GENETIC FIDELITY IN CITRUS REGENERATED THROUGH STIGMA/STYLE SOMATIC EMBRYOGENESIS

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juvenility, somatic embryogenesis, Citrus, somaclonal variations, flow cytometric analysis

The biotechnology applications in *Citrus* are often limited because of the morphological reversion to the juvenile state of plants. Investigations on the morphological traits of the fruits take long periods of time and become rather costly when applied on new mutant somaclones, on regenerants and on micropropagated plants.

In this work, the degree of juvenility that occurs in plants regenerated from *in vitro* stigma/style culture of lemon, mandarin, sour orange and sweet orange was investigated. Comparisons were made between somatic embryo-derived scion and mature-phase scion, both grafted onto sour orange. Growth conditions in greenhouse and in field were also compared.

The plants were examined during the first 3 years of growth after grafting, for differences in stem and leaf growth and the presence or absence of reproductive structures and thorns.

Plants regenerated from stigma/style culture were initially morphologically different from mature-scion propagated plants, and showed many features being characteristic of seedlings. However, under greenhouse conditions, juvenile characters were lost during the second year after culture initiation mainly in the terminal portion of some shoots, even after their grafting onto rootstocks. Regenerated plants began fruiting on some branches after three years with different grade according to the species: 50, 20 and 10 % with mandarin, sour orange and lemon, respectively. Flowering usually occurred 1-2 years later in plants growing in the field.

Flow cytometric analysis and two different DNA-based techniques (ISSR and RAPD) were used to detect the genetic fidelity in regenerated plants. In these experimental conditions, somaclonal variations in regenerants were never observed.