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Molecular characterization of 'Tahiti' lime selections by RAPD analysis

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Genetic diversity of 'Tahiti' lime is restricted, and in Brazil most of the commercial orchards are predominantly based on only two selections. New 'Tahiti' lime selections were obtained and their horticultural performance was evaluated in the State of São Paulo, Brazil, during seven years. Anatomical, physiological, and biometric analyses indicated differences between the 'IAC 5', 'IAC 5-1', 'CNPMF/EECB', 'CNPMF 2000' and 'CNPMF 2001' selections, especially between 'CNPMF 2000' and 'CNPMF 2001', which showed lower drought tolerance and reduced fruit yield. RAPD markers were used to evaluate the genetic similarity of these selections. PCR reactions with primers A7, A10 and AA7 resulted in 23 fragments of which only four were polymorphic. Specific markers were found for 'CNPMF 2000' which had the lowest genetic similarity related to the other 'Tahiti' lime selections. Morphological analyses corroborated this result, since plants of 'CNPMF 2000' selection had distinct morphological and anatomical characteristics, such as longer thorns and higher number of stomatas.

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A natural mutant cultivar 'Zigui Shatian' pummelo (*Citrus grandis*) showing self-sterility due to abnormal post-zygotic embryo development not self-incompatibility

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'Shatian' pummelo (*Citrus grandis*), a widespread citrus cultivar in China, was reported to be self-incompatible, and its pollen tube was believed to be arrested in style after self-pollination. Herein, we characterized one 'Shatian' pummelo mutant, called 'Zigui Shatian' pummelo. It showed similar morphology (leaf shape, stoma size and density, pollen shape and size), the same development progress of female and stamen organ, and same DNA ploidy level as the common 'Shatian' pummelo. However, in contrast with the common 'Shatian' pummelo, pollen tubes of self-pollinated 'Zigui Shatian' could grow normally in the stigma, style and ovary, and finally enter into the embryo sac resulting in successful fertilization. Further histological analyses verified that post-zygotic development was abnormal which caused the seed abortion in self-pollination. Simple sequence repeats (SSR) analysis revealed that one of the 120 primers showed polymorphism; it indicated that 'Zigui Shatian' pummelo and 'Shatian' pummelo were different at DNA level. All these data suggested that there is another way to block the self-pollination in 'Shatian' pummelo, not only in the style. Our research provided valuable information and material for the future in-depth study self-incompatibility mechanism in pummelo and other citrus species.

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Relation between temperature and the colour coordinate ?a" during the development of the external colour of lemon fruits

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This study describes the evolution of the colour coordinate "a" in the peel of the lemon varieties 'Eureka Frost', 'Lisbon Frost' and the clone 'Fino 49', all on *Citrus macrophylla* rootstock, to ascertain the influence of temperature on the same. The study covered six campaigns (2003/04 and 2005/06 to 2009/10) with measurements of the colour coordinate "a", being made every week or fortnight. The results point to greater correlation between the colour coordinate "a" in peel and low temperatures than medium temperatures. The coordination between the colour coordinate "a" and low temperatures is greatest for the mean value