

Studies on embryo sac development in self and cross pollination and parthenocarpy governed fruit development in lemon cv. Kagzi Kalan

Vijaysinha Kakade^{1*} and A. K. Dubey²

ICAR-Indian Institute of Soil and Water Conservation, Research Centre, Vasad, Gujarat (India)

e-mail: vijaykakade.7@gmail.com

Received: January 2019 ; Revised Accepted: May 2019

A B S T R A C T

The present study aimed to study the embryo sac development (ESD) before anthesis and 1 and 7 days after self and cross pollination and parthenocarpic ability to understand the seedless fruit development in Kagzi Kalan lemon. The results of ESD showed normal female gametophyte of Kagzi Kalan lemon, as large percentage of normal ovules (60.16 to 66.67%) with no sign of degeneration had been observed in the pistils collected before anthesis and 1 day after pollination (DAP). Further, ESD studies also showed significant differences in number of fertilized and unfertilized ovules after 7 DAP. The highest percentage of fertilized ovules (71.39%) was observed under cross pollination treatments. Whereas, under self-pollination treatments, no sign of fertilization was observed and most of the ovules had degenerated or disappeared nuclei. The results of fruit set at 7 DAP showed 100% fruit setting under all treatments. Whereas, at 20 DAP, highest fruit set was recorded in Kagzi Kalan × Kagzi Kalan cross (94.50%) however, highest retention of fruits (53.61%) was observed under Kagzi Kalan × Kagzi lime. Self-pollination of Kagzi Kalan resulted into production of seedless fruits, whereas cross pollination treatments produced 100% seeded fruits. Notwithstanding, pollen parents also influenced physicochemical quality of fruit in Kagzi Kalan.

Key words: Embryo sac, Sterility, Parthenocarpy, Seedlessness.