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STUDY OF EMBRYOGENIC DEVELOPMENT IN SOFT, DRY AND SEMI-DRY CULTIVARS OF DATE PALM (*Phoenix dactylifera* L.)

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ABSTRACT

This study was conducted to investigate the difference in embryogenic development through the anatomical study of the flowers of three cultivars of dry ('Derry'), semi-dry ('Zahdy') and soft ('Barhee') date palms, were cultivated in Basrah Governorate, Southern of Iraq, and all were pollenated with the male cultivar 'Ghanami Akdher'. Female flower samples were collected after several periods of pollination (6, 12, 24, 36, 48, 72, and 96 hours). The growth of the pollen tube from the stigma to the embryonic sac and the development of the three carpels in these flowers were traced through anatomical sections. The results showed that the female flower at the beginning of its early stages and before the fertilization process contains three ovaries in the middle of each of them a chamber dedicated to the ovule. This ovule is connected to the inner wall of the ovary by a cylindrical growth that protrudes from the placenta tissue called the funiculus. After 6 hours of pollination, some pollen tubes began to grow on the surface of the stigma, and there was no trace of the pollen tube passage channel. The 12 hours after the pollination process, the pollen tube passage channel appeared for all the female cultivars under study. The samples after 24 hours of pollination process, found that the pollen tube for all the female cultivars under study had developed in its growth to the style ovary tissue penetrated towards the embryonic sac. The cultivars differed from each other in terms of the growth and development of the pollen tube after 36 hours of pollination. The pollen tube developed and grew through the style ovary and embryonic sac to reach the ovule and caused double fertilization to occur for the 'Barhee' cultivar.48 hours after the pollination process, the results indicated that double fertilization took place in the female flowers of the 'Zahdy' cultivar. The 72 hours after pollination, fertilization was found in the female flowers of the 'Derry' cultivar, where the passage channel of the pollen tube disappeared, the fertilized egg developed, and the other two unfertilized ovules began to decay and decrease in size. The flowers of the three cultivars had completed the fertilization process before the 96 hours after