

ABSTRACT

EFFECT OF STIGMA FLUID ON POLLEN GERMINATION AND HYBRIDIZATION STUDIES IN POMEGRANATE

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In this thesis, pollen germination and hybridization experiments with Irlıganlı pomegranate genotype were conducted with Hicaznar pomegranate cultivar commonly grown in Denizli region using different saccharose and boric acid concentrations in 2013. In the hybridization experiments, Hicaznar × Irlıganlı combination 28 flowers pollinated and 9 fruit were obtained. According to pollen germination test, the highest germination of 7.2% was obtained from in 1% agar+20% saccharose+25% boric acid medium. Using the same medium, pollen germination was observed as 19.5% in A type flower while that of 29.1% in B type flower during the beginning of flowering period in 2015. In 2015, in *in vitro* pollen grain germination tests with hanging drop method were performed with stigma fluid. In this method, it was aimed that 10 stigma in distilled water waited different times by continuously shaking could be helpful for pollen germination. In this study, the best germination was obtained as 18.3% from B type flower waited in 30 s in stigmatic fluid. There was not germination observed in A type flower. At the end of flowering period, while the germination ratio 15.1% in A type flower, that of 29.1% in B type flower. When germination tests were performed with only one stigma dipped in one drop of distilled water for 30 s; unfortunately these noy any germination was achieved neither A type nor B type flower. Besides germination tests, anther number, pollen number and viability (TTC) tests were done in 2015. While the highest germination ratio was observed as 92.39% in A type flower during the beginning of flowering period, that of was observed as 95.00% in B type flower at the end of flowering period. While anther count was 329.8 in A type flower, that of was 300.4 in B type flower. While a total number of polen grain per flower were found as 2143700 in A type using with hemacytometric plate, tha of were found as 1036380 in B type flower.

Key words: *Punica granatum*, Hicaznar, pollen characteristics, hybridization