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Nitrogen fertilization affected the pollen production and quality in apple cultivars “Jerseymac” and “Golden Delicious

Abstract: Pollen quality is very important for apple production because of its gametophytic self-incompatibility. This study was conducted to determine the effects of different nitrogen fertilization doses on pollen production and quality in apple cultivars ‘‘Jerseymac’’ and ‘‘Golden Delicious’’ in Egirdir province of Turkey. Apple trees were fertilized with 0, 30, 60, and 90 g nitrogen per tree in each year during five consecutive years between 2001 and 2005. Nitrogen fertilization significantly affected pollen production and quality in both apple cultivars. The highest pollen number (55,087) as well as the highest percentage of viable (45.6%) and germinated pollens (62.1%) were determined from 60 g nitrogen fertilization dose in apple cultivar ‘‘Jerseymac.’’ However, differences between 30, 60, and 90 g per tree nitrogen doses were not significant. Likewise, 60 g nitrogen fertilization per tree also resulted in the highest number of pollens (84,395) and the percentage of viable pollens (52.1%) in apple cultivar ‘‘Golden Delicious.’’ The highest percentages of germinated pollens were obtained from the 30 (54.8%) and 60 g nitrogen fertilization (59.6%) doses in apple cultivar ‘‘Golden Delicious.’’ The number of anthers per flower and morphological homogeneity were not affected by nitrogen fertilization treatments in both apple cultivars.

Keywords: Malus_domestica Borkh; morphological homogeneity; pollen performance; pollen germination; soil fertility; viable pollen