

Study of population fluctuations of the pistachio twig borer, *Kermania pistaciella* Amsl (Lep.: Tineidae) using delta pheromone trap in Kashan pistachio orchards

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Pistachio twig borer, *Kermania pistaciella* is an important pest of pistachio trees in Iran, especially in Kashan region. It has a univoltine life-cycle and its larvae tunnel and feed inside one and two years' old pistachio twigs for almost 10 months each year. Larval feeding inside the twig causes severe economic damage by fruit drop, twig weakening and death. Most pistachio plantations in Iran are treated every year with insecticides to suppress *K. pistaciella* populations. Insecticides, however, pose a serious threat to the environment and are harmful to natural enemies. Pheromone traps are used for different purposes including pest population estimation, biology and behavior and emergence time, peak and end of flight period, effectiveness of insecticides, dispersal and distribution, disruption in mating behavior and most importantly, mass trapping to reduce pest populations and avoid damage. For the integrated management of *K. pistaciella*, population fluctuations of adult insects was studied using delta pheromone trap from 2015-2016 in Kashan pistachio orchards. Delta type traps baited with sex pheromones provided from Ferobank Company of Netherland were hung in pistachio orchards (Akbari variety) at 20 lures per one hectare when pistachio buds started to open in late March - the beginning of April and number of captured male insects were counted every three days. *K. pistaciella* males first emerged in 18th of March to end of April and they had nearly forty two days flight period. The results showed that the flight peak of male insects in traps was varied in five gardens, so that it was different from 8 to 21 April. Based on the results, first, peak and end of catch insects was occurred on 18 March, 8-12 April and 31 April, respectively. The results showed that the peak flight of male insects in traps was different in five different orchards and it was varied from 8 to 21 April. It seems different because of weather conditions of these orchards was different. The number of captured insects in peak flight were different in the orchards, so that average varied from 4 to 52. Previous studies in Rafsanjan has estimated the adult emergence from March to mid May and peak flight from 25 to 30 March. There are differences in the biology of the pest in Kashan and Rafsanjan due to differences in climatic conditions of two regions. Based on previous studies, the total daily effective temperature for peak adult emergence, according to the minimum threshold temperature was 12°C. Therefore it is possible to determine adult emergence time based on the daily effective temperature in the region and scheduled to control pest.

Keywords: Population fluctuations, *Kermania pistaciella*, delta pheromone trap.