

## **Relationship between distribution of the clearwing moth, *Paranthrene diaphana* dalla Torre & Strand (Lep.: Sesiidae) on babylon weeping willow with altitude and planting area in Tehran region**

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The clearwing moth, *Paranthrene diaphana* has a wide distribution in Tehran in urban green space of the babylon weeping willow trees. This pest cause of dry branches and attacks other wood-boring pests and pathogens to penetrate the tree. Babylon willow trees are one of the most important trees in green spaces of Tehran. In this study, the relationship between the distribution of the clearwing moth on willow with altitude and its planting location has been investigated in Tehran. For this purpose, green space in Tehran on the basis of altitude was divided into three regions: an altitude of less than 1200 m (south Tehran region including Kahrizak, Shahed University, Velayat park, Afsarieh and Abozar Blvd), Height of 1,200 to 1,400 meters (central part of Tehran including Qasr Prison, Javanmardan park, Laleh park, Fateh Square and Sadeqieh Metro Station) and with a height of over 1,400 meters (north of Tehran, including ShahidMahalati, Darabad, Niayesh west Blvd., NahjAlblagheh park and Ghaem settlements). Then in each region, five cited parks were considered as replicate. About 30 willow trees in each park were studied with a mean age of 5-10 years old. Pest infestation level was determined on the basis of the presence of galls or larval Frass at least on the one branch or trunks of trees in autumn of 2015. Percentage of infestation in the parks for planting trees in meadows and trees on the boulevards had been separately recorded. Data were analyzed as factorial experiment (two factors of height above sea level and planting location) with randomized complete block design. Statistical analysis indicated that altitude has a significant impact on the dispersion ( $F(2, 20)=18.89, P<0.01$ ), this means that with increasing altitude, infestation reduced, so that the infestation in south of Tehran was approximate 100%, nearly double the central and northern Tehran. The infestation level in the north and center of Tehran showed no significant difference. Also plantation of tree in the meadows significantly affected on pest infestation ( $F(1, 20)=24.055, P<0.01$ ), so that in these trees up to 50%, less infestation occurs. Of course, altitude and planting in the meadow had interaction effect. So it can be concluded that dry air and low humidity in the south of Tehran and sandy soils that cannot hold water, causing stress to the plant and attract the pest. On the contrary in meadows due to suitable irrigation and durable water at these locations due to retaining moisture, it is possible that the plant does not suffer from water stress. Therefore to prevent pest outbreak in the region and preserve the tree, weeping willow tree planting is not recommended in southern Tehran and as far as possible be limited to meadow planted areas.

**Keywords:** *Paranthrene diaphana*, Tehran, babylon weeping willow.