Spatial distribution of the diamondback moth, Plutella xylostella and its parasitoid, Cotesia plutellae on the cauliflower in south of Tehran region

Elahe Rostami1*, Ghelamhosein Hasanlouhi, Habib Abbaspour2, Alireza Askarianzadeh3, Jabber Karimi1
1- Ph.D Student of Agricultural Entomology, Bu-Ali Sina University, Hamedan, *Email: elae_2003@yahoo.com, 2- M.Sc Student of Agricultural Entomology, Department of Plant Protection, College of Agricultural Sciences, Shahed University, Tehran, 3- Associate Professor, Department of Plant Protection, College of Agricultural Sciences, Shahed University, Tehran, 4- Assistant Prof. of Plant Protection Department, College of Agricultural Sciences, Shahed University, Tehran

The diamondback moth Plutella xylostella L. (Lep.: Plutellidae) is one of the important pests of cruciferous crops throughout the world and sometimes causing more than 90% crop loss. In recent years, its population in cabbage plantations in Iran has been increased and showed resistance to chemical insecticides. One of the important parasitoids of pest is Cotesia plutellae (Hym.: Braconidae). This study was carried out to evaluate the spatial distribution of P. xylostella and its parasitoid, C. plutellae, in south of Tehran region during the year of 2011. The plant was selected as sampling unit. The proper measurement of the sample, with the use of primary sampling was determined as 100 sampling unit. In this research, the spatial distribution all life stages of P. xylostella and C. plutellae were determined using regression models (Taylor’s power law and Iwao patchiness regression). The result of two mentioned methods indicated that the spatial distribution pattern all life stages P. xylostella was clumped. In Taylor and Iwao models, the slopes of regression for all life stages of P. xylostella were greater than one. This two mentioned methods indicated that the spatial distribution pattern of parasitoid was uniform and in Taylor and Iwao models, the slopes of regression for all life stages of parasitoid was less than one. Spatial distribution pattern can be useful to improve the sampling program, exact estimating the population density of insects and planning pest management programs.

Keywords: spatial distribution, Plutella xylostella, Cotesia plutellae, Tehran