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Bangladesh J. Agril. Res. 49(1): 99-103, March 2024 **Short Communication**

INFESTATION AND POPULATION FLUCTUATION OF SOME INSECT PESTS AT ROOF TOP GARDEN IN GAZIPUR, BANGLADESH

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Rooftop gardens guide the social life as well as provide experience of self-identification and independence, the place one can in particular acquire self-satisfaction (Rashid and Ahmed, 2010). It can play an important role in supplying fruit and vegetable at urban markets and meeting the food demand of growing urban community (FAO,2012; Orsini *et al*., 2014).

With fast and unplanned urbanization, poverty and food insecurity has been growing alarmingly in Dhaka city (Choguill, 1995). Rooftop gardening can be a positive approach in ensuring meals furnish and enjoyable dietary desires of the city dwellers.

Many people are involved in rooftop gardening, especially in city areas at Bangladesh. Their efforts are helping to make the cities greener, despite lack of cultivable lands. People expecting chemical-free vegetables and fruits but insect pest attack occurs in rooftop garden where people apply chemical insecticide without knowing the insect pest. Total 24 families and 46 species of insect attack were reported at rooftop garden (Han *et al*, 2017). Insect pest attack and its severity may be different in roof garden compare to field agriculture but in Bangladesh research work is very scanty related to insect pest incident at rooftop garden. Insect pest status and their population fluctuation will help to develop sustainable pest management strategy at rooftop garden. So, the present study was designed to know the insect pest status and population fluctuation at rooftop garden.

The experiment was conducted at rooftop garden of Horticulture Research Centre (HRC) and rooftop garden of Soil Science Division (SSD), Bangladesh Agricultural Research Institute (BARI), Gazipur during 2021-2022. The rooftop garden of HRC was based on fruit crop where guava, mango, papaya, lemon available and in SSD rooftop garden, bottle gourd, guava, mango etc were present. Data were collected by visual observation at HRC and in SSD rooftop garden, pheromone traps were used in both sites. For visual observation every plant was observe closely at 15 days interval to identify insect pest and their infestation.

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Magnifying glass and microscope were also use to identify insect pest complex. Percent plant infestation by an insect pest was calculated by counting total number of plants and number of infested plants by the pest. In case of more than 40% plant infestation by an insect pest, percent leaf infestation was calculated. For percent leaf infestation calculation, 10 leaves of 5 infested plants were randomly selected and infested leaf was counted.

Three pheromone traps of *B. cucurbitae* and three pheromone traps of *B. dorsalis* were set in the rooftop garden of SSD. Population of *B. cucurbitae* and *B. dorsalis* were counted from pheromone trap catches. The mean number of *B. cucurbitae* and *B. dorsalis* were determined from total trap catches at the same dates.

The insects namely spiraling whitefly and mealybug were found at guava plant of the HRC rooftop garden (Table 1). It was observed that less than 34% (17 to 33.67%) guava plants of the HRC rooftop garden were infested by spiraling whitefly but more than 80% (83.33 to 100%) guava plants were infested by mealybug. In some cases, both insects were present at the same leaf of a plant with a complex situation although spiraling whitefly, mealybug complex infested guava plant did not excide 20% (0 to 16.67%) (table1). Table 1 also indicates that 30 to 80% guava leaves were infested at rooftop garden by mealybug during the study period. The highest mealybug infested guava plants and leaves were found in the month of April and infestation rate was lower in the month of December-January.

In case of mango, papaya and lemon only mealybug was found. During the study period 12.5 to 35% mango plants and 16.67 to 39.33% Papaya plants were infested by mealybug. In both case, the highest mealybug population was found in the month of April and lower in the month of December to January (Table 1).

There were two lemon plants in HRC rooftop garden and both of them were infested by mealybug. It was observed that 30 to 80% leaves of lemon were infested by mealybug at rooftop garden of HRC building. The highest leaf infestation was found in the month of April and the lowest in the month of January (Table 1).

Fruitfly population was observed at rooftop garden of SSD by using pheromone trap. Average number of fruitfly per pheromone trap is shown in figure 1. It was found that *B. cucurbitae and B. dorsalis* population were found though out the observation period ranged from 13.67 to 36.33 per trap and 12.33 to 44.33 per trap respectively. *B. cucurbitae* population was found the highest in the month of March- April and *B. dorsalis* population was found the highest in the month of May. Both insects population were found the lowest in the month of December (Figure 1).

Table 1. Percent plant and leaves infestation at rooftoptop garden by different insect pest during 5 December, 2021 to 19 May, 2022

Observed plants or leaves	Insects	Infestation rates (%) at different observation dates											
		05/ 12/ 21	20/ 12/ 21	04/ 01/ 22	19/ 01/ 22	03/ 02/ 22	18/ 02/ 22	05/ 03/ 22	20/ 03/ 22	04/ 04/ 22	19/ 04/ 22	04/ 05/ 22	19/ 05/ 22
Guava plants	Mealybug	83.33	83.33	100	100	100	100	91.67	83.33	100	100	83.33	83.33
	Spiraling whitefly	17	18.22	18.33	21.33	26.67	33.67	28.67	25	26.67	28.67	22	19.33
	Mealybug and spiraling whitefly complex	0	0	0	8.33	8.33	16.67	8.33	8.33	16.67	8.33	0	0
Guava leaves	Spiraling whitefly	40	30	60	70	60	80	70	60	80	70	50	60
Mango plants	Mealybug	14.5	12.5	15	13.33	25	25	22.5	27.5	32.5	35	32.5	28.5
Papaya plants	Mealybug	16.67	18.33	16.66	23.33	21.67	31.33	33.67	31.33	37.67	39.33	33.33	27.67
Lemon leaves	Mealybug	40	50	30	50	60	60	70	60	80	70	50	40

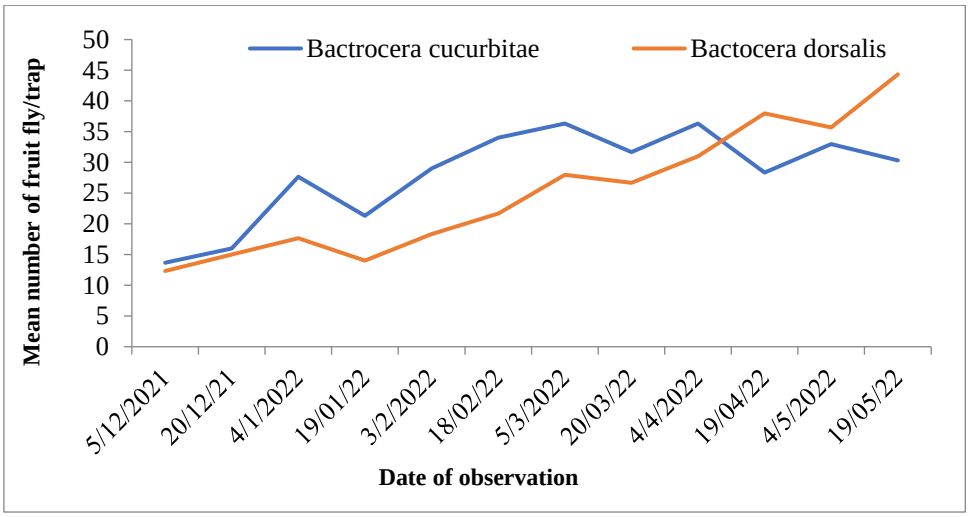

Fig.1. Mean number of fruitfly per pheromone trap during 5 December, 2021 to 19 May, 2022.

Insect pest status and population study were studied by different researcher at field condition but scanty at rooftop condition. According to rooftop gardener response, Sheel *et al*, 2019 was found ant, mealybug, whitefly and green leafhopper as most occurring insect at rooftop garden which confirm the result of the present study. Khan (2022) was found the highest incidence of spiraling whitefly population in September followed by October, November and May while the lowest in July followed by June, January and February, respectively. In study, mealybug and spiraling whitefly infested plants and leaves were observed high at February to April but low at December to January. Less green vegetation, low temperature and relative humidity may be the reason of lower mealybug and spiraling whitefly infestation at December to January. On the other hand, high temperature and green vegetation may be the reason of higher insect population at April.

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