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POPULATION DYNAMICS OF CUT WORM *AGROTIS IPSILON* HUFNAGEL ON MAIZE IN KASHMIR

Danishta Aziz*, Sheikh Bilal Ahmed, Munazah Yaqoob, Khursheed Aalum[1], Sheikh Aafreen Rehman and Nahida Anjum

Division of Entomology, SKUAST-Kashmir, Shalimar 190025, J&K, India
[1]Department of Botany, Govt. MVM Bhopal, 462008, Madhya Pradesh, India
*Email: daniaziz9974@gmail.com (corresponding author)

ABSTRACT

The status of cut worm *Agrotis ipsilon* Hufnagel was studied in district Baramulla and its incidence was monitored in maize crop at the field of Faculty of Agriculture, Wadura, SKUAST-Kashmir during 2018. The incidence was observed at weekly intervals and was found to be infesting maize starting from germination to maturity. The results revealed maximum incidence and damage (74.24± 0.89%) at low altitude followed by medium (58.07± 1.87%); while the least was at high altitude (36.27± 0.78%). The larvae started occurring from 20th standard week (SW), reached its peak on 25th SW and then started decreasing from 26th SW. Incidence revealed a positive and significant correlation (r=0.634) with maximum temperature.

Key words: Maize, *Agrotis ipsilon*, north Kashmir, seasonal incidence, host range, status, altitude, weather parameters, correlation, temperature

Maize (*Zea mays* L.) is one of the most important cereal crops, with highest genetic yield potential among cereals (Shiferaw et al., 2011), and thus a miracle crop (Singh et al., 2012). In Kashmir valley, maize is usually cultivated at higher altitude terrains, karewas and plains under rainfed agriculture. According to Dhaliwal and Arora (2006), the huge gap between attained and attainable yield under Kashmir conditions can be attributed to biotic stresses, of which insect pests alone cause 15.6% yield loss. Bhagat et al. (2008) states that >130 insect pests cause damage to maize in India. Among these, cut worms (*Agrotis* spp.), borers (*Chilo* spp.), shoot flies (*Atherigona* spp.) and white grubs (*Holotrichia* spp.) are serious and only ten species cause severe damage from sowing till storage (Arabjafari and Jalali, 2007). In particular, maize cut worm causes considerable damage in hilly and submountainous regions of Jammu and Kashmir. According to Atwal (1986), cut worm has a very wide host range but seedlings are most severely damaged. This study evaluates the population dynamics of cut worm *A. ipsilon* infesting maize in north Kashmir.

MATERIALS AND METHODS

The survey on status of *A. ipsilon* infestation was conducted at three altitudes viz., high (>2200 masl), medium (1650-2200 m) and low (<1650 masl) in district Baramulla. A well-structured questionnaire was got responded from randomly selected farmer (10 farmers/ location). The data on % incidence was subjected to statistical analysis. The incidence on maize variety, Composite-4 was monitored in the field at FoA, Wadura starting from germination. The field was prepared as per package of practices on cereals (2017) published by SKUAST-K and then seeds of maize were sown in five plots (replications) of size 1 x 2 m each with spacing 60x 20 cm on 11th of May, 2018. Three quadrants (900 cm^2)/ replication were randomly selected and the mean number of larvae counted weekly from May to July, 2018. The data obtained was correlated with weather factors obtained from Division of Agronomy, FoA, SKUAST-K, Wadura.

RESULTS AND DISCUSSION

The data on incidence of *A. ipsilon* on maize

Table 1. *Agrotis ipsilon* infestation in maize- District Baramulla, kharif 2018

Altitude	Location	Distance masl (m)	*Plant Damage (%)	Pooled Mean± S.E
High (>2200)	Tangmarg	2210	35.16± 2.01	36.27± 0.78
	Kunzer	2228	37.78± 2.25	
	Kreeri	2241	35.89± 1.87	
Medium (1650-2200)	Watergam	1653	54.36± 2.13	58.07± 1.87
	Tragpora	1659	60.34± 1.79	
	Rohama	1657	59.53± 1.63	
Low (<1650)	Bijhama	1640	73.44± 1.70	74.24± 0.89
	Sopore	1591	73.27± 1.36	
	Pattan	1547	± 2.27	

*Mean of 10 replications.

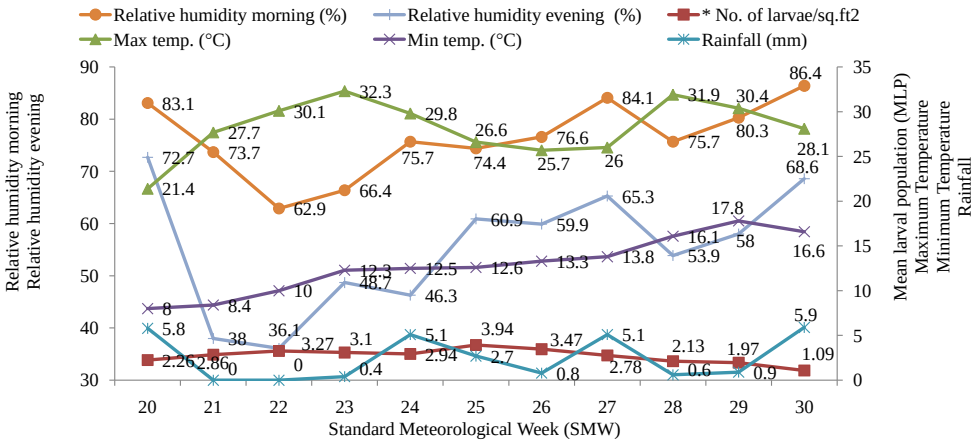

Fig. 1. Population dynamics *A. ipsilon* on maize (FoA, Wadura, kharif 2018)

altitude wise is presented in Table 1, which reveal that the damage appeared at all three altitudes viz; high (>2200 m), medium (1650-2200 m) and low (<1650 m) in the range of 36.27± 0.78, 58.07± 1.87 and 74.24± 0.89%, respectively, and maximum incidence occurred at Kunzer (37.78± 2.25), followed by Kreeri (35.89± 1.87), and the least at Tangmarg (35.16± 2.01) % incidence. At mid altitude, maximum incidence was recorded at Tragpora (60.34 ± 1.79), and at low altitude, maximum incidence was at Pattan (76.04± 2.27) followed by Bijhama (73.44 ± 1.70), and Sopore with lowest (73.27± 1.36). These data agree with those of Arifie et al. (2019) that maximum and least % incidence was on maize at low and high altitudes of Kashmir, respectively. Alexander and Hillard (1969) stated that altitude plays an important role in the distribution of plant and animal species, with large numbers being recorded at lower altitudes. Incidence occurred starting from germination to maturity. The larvae appear from 20th standard meteorological week (SMW) (2.26± 0.13 larvae/ 900 cm^2) after sowing; this reached its peak in 25th SMW (3.94± 0.99 larvae/ 900 cm^2), and thereafter decreased.

The incidence of *A. ipsilon* correlated with weather factors revealed a significant and positive correlation (r = 0.634) with maximum temperature; and a non-significant and positive correlation (r = 0.367) with minimum temperature. Non-significant negative correlation (r = - 0.099) with morning relative humidity (RH) and a non-significant positive one (r = 0.004) with evening RH; and with rainfall it is a non- significant and negative correlation (r = -0.332) (Fig. 1). Kumar et al. (2018) observed peak incidence on oats during 23rd SMW. Lone and Zaki (1999) observed that the damage occurred in maize from April to third week of June, when saplings are two to six leaf stages and May sown crop is most severely damaged.

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