

Incidence of sucking insect pests of transgenic Bt cotton in relation to abiotic factors

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SUMMARY

Among various sucking pest leaf hopper [*Amrasca biguttula biguttula* (Ishida)] and white fly (*Bemisia tabaci* Gennadius) remained active throughout the cropping season with varying density. No population of thrip was observed during this period. The peak population of leaf hopper was observed during 30th (1.3/3 leaves) and 31st (1.0/3 leaves) standard meteorological weeks. The peaks of whitefly adults were recorded during 30th (1.3/3 leaves), 34th (2.2/3 leaves) and 35th (1.4/3 leaves) standard meteorological week. The population of mealy bug was observed only in the hybrid RCH 134. The correlation analysis showed that the leaf hopper mean data over the season was negatively correlated with morning relative humidity, mean relative humidity and rainfall, while other parameters showed positive influence on the leaf hopper population. The white fly was positively correlated with morning relative humidity and means relative humidity and negatively correlated with maximum, minimum, mean temperature, rainfall and evaporation in all the *Bt* hybrids. Mealy bug was positively correlated with morning relative humidity, evening relative humidity, mean relative humidity and rainfall and remaining parameters were negatively correlated. The multiple linear regression analysis showed that all the weather parameters together responsible for a large and significant variation in the population of all the sucking pests.

Key Words : Bt Cotton, Sucking pest, Abiotic factors and incidence

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Cotton, *Gossypium hirsutum* Linn. is a major commercial crop grown in India and is highly vulnerable to insect pests (Selvaraj *et al.*, 2011). India is the second largest producer of cotton in the world after China (AICCIP, 2009). Cotton ecosystem harbours of wide varieties of arthropods and consequently requires a constant protection from insect pests. Before the introduction of Bt cotton, bollworm and sucking insect pests were the two major groups in Punjab against which most of the insecticides were used. Although the Bt cotton provides effective management of bollworms but not effective against sucking pests (Mann *et al.*, 2010)

which still pose a great threat to its cultivation and necessitate insecticidal application to avoid yield losses (Shera *et al.*, 2010). The incidence and development of all the insect pests are much dependent upon the prevailing environmental factors such as temperature, relative humidity and rainfall (Aheer *et al.*, 1994). Among various sucking pests, cotton leaf hopper [*Amrasca biguttula biguttula* (Ishida)] is one of the important pest of cotton crop. Both nymphs and adults of *A. biguttula biguttula* suck the plant sap and introduce salivary toxins that impair photosynthesis in the proportion to the amount of foliage. They feed on the underside of leaves and cause distortion, and leaf curling in the plant. Population of leaf hopper occurs throughout the crop season but it fluctuates with the various parameters (Vennila *et al.*, 2007). Similarly, whitefly and mealy bug also cause severe damage to *Bt* cotton in relation to various abiotic factors. So, there is need to monitor the population of sucking pests and take up control measures for the management of these pests on Bt cotton. Keeping this in view, a study was undertaken to monitor the population of sucking insect pests on Bt cotton

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