

Effect of Abiotic and Biotic Factors on Jassid and Fruit and Shoot borer in *kharif* Okra Crop

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International Journal of Plant Protection, Vol. 2 No. 1 : 119-122 (April to September, 2009)

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SUMMARY

The field density of *Amrasca biguttula biguttula* and *Earias vittella* along with their associated abiotic and biotic factors were observed in okra field at Kanpur. The incidence of jassid, *Amrasca biguttula biguttula* began from July and fruit and shoot borer, *Earias vittella* from August and continued till October. Among the parasitoids, *Anagrus flaveolus* associated with jassid and *Trichogramma chilonis* with *E. vittella* were the most important natural enemies. The percentage of parasitism of *A. flaveolus* ranged from 3 to 9 and of *Trichogramma chilonis* from 10 to 12 per cent. The data revealed a high positive relationship between the pest and parasitoids indicating an important role in suppressing pest population to some extent. Predator, *Chrysoperla carnea* was recorded preying on nymph and adult of *Amrasca biguttula biguttula*. The abiotic factors were closely related with pest population.

Key words :

Okra, *Amrasca biguttula biguttula*, *Earias vittella*, Natural enemies

Okra (*Abelmoschus esculentus*) is an important vegetable crop in India. It is attacked by a number of insect-pests, mites and nematodes (Chaudhary and Dadheech, 1989). Among these pests, the jassids and shoot and fruits borer are the most important. The cost of plant protection with chemical pesticide is very high and it has hazardous chemical effect to the environment (Mukhopadhyay, 2003). Keeping this point in view, a study was carried out in Kanpur, Uttar Pradesh on the occurrence of natural enemies and their role in regulation of host population.

MATERIALS AND METHODS

To determine the seasonal abundance of *Amrasca biguttula biguttula* and *Earias vittella* on okra, the experiments were conducted at Vegetable Research Farm, Kalyanpur, C. S. Azad University of Agriculture and Technology, Kanpur during *kharif* season of 2005 and 2006 as well as in the laboratory of Department of Entomology, C.S. Azad University of Agriculture and Technology, Kanpur for two consecutive years. Okra Azad Bhindi-1 was sown in third week of July in both the crop seasons in an area of 13.45 x 8.50 m with a buffer strip of 1.00 m all around the three replications. Crop was cultivated by adopting recommended agronomic practices of this region. Weekly observations on appearance and population build-up of jassid and fruit and shoot borer and their associated natural

enemies were recorded on five randomly selected plants from each replication. Immature stage of *Earias vittella* were collected from okra field on every observation date and reared separately in laboratory to record the number of parasitoids emerging from them and to identify the parasitoids. In addition, abiotic factors such as temperature, relative humidity and rainfall were taken from Meteorological Section, C. S. Azad University of Agriculture and Technology, Kanpur, to work out the relationship between pest density and abiotic factors

RESULTS AND DISCUSSION

Incidence of nymphs and adults of *Amrasca biguttula biguttula* was noticed on the crop in the first week of August, 2005. However, in 2006 the pest appeared early during first week of July. The population of jassid remained active throughout the growth stage being low as early and late stage but high at active vegetative growth stage. Initially, the population observed were 7.40 and 7.20 jassid/5 plant in the first week of August and fourth week of July during the crop season, respectively. Then, the jassid population gradually increased to maximum of 30.66 and 26.30 adults /5 plant, respectively in the to crop season during first week in September, 2005 and 2006 and third week in September, 2006 (Fig.1 a and b).

In the investigation, *Anagrus flaveolus*,

Accepted :
March, 2009