

Insect pest status of vegetable crops in Western Uttar Pradesh

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ABSTRACT

Field surveys were conducted for three years (2001-2003) to record the pest status of vegetable crops in western Uttar Pradesh. Among the herbivores, Lepidoptera, Hemiptera, Coleoptera, Diptera and Thysanoptera were the predominant orders. Cotton jassid (*Amrasca biguttula biguttula* Ishida) on okra; fruitfly (*Bactocera cucurbitae* Coquillett) on cucurbits; shoot and fruit borer (*Leucinodes orbonalis* Guenee) on brinjal; cabbage butterfly (*Pieris brassicae* Linn.) on cole crops; pea leaf miner (*Phytomyza horticola* Goureau) on pea and fruit borer (*Helicoverpa armigera* Hubner) on tomato were the most serious pests in different vegetable crops in this region.

Key words :Uttar Pradesh, Vegetable crops, Pest status.

INTRODUCTION

Almost all types of vegetable crops including leafy vegetables, cole crops, cucurbits, pulse vegetables and tubers crops etc. are grown in western Uttar Pradesh (Anonymous, 2000). Many insect pests attack all these crops and their intensity varies in time and space. In UP, the government is laying great emphasis on extending the area under different vegetables crops but the information about insect pests associated with these crops is scanty. Therefore, the present investigations were conducted to ascertain the occurrence and status of different insect pests on vegetable crops of this region so that appropriate strategies can be formulated for their management.

MATERIALS AND METHODS

Extensive surveys were conducted in different areas of this region during different periods of year and on different crop growth stages. The studies were undertaken over a period of three years i.e. from 2001 to 2003. The insect pests of major growing vegetables crops were recorded. The immature stages of insect pests that occurred as and when on vegetable crops (from the date of planting till the harvest) were collected using suitable techniques. The immatures were reared in the laboratory on the host from which they were collected for the adult emergence. Adults were killed and preserved for identification.

RESULTS AND DISCUSSION

Field surveys showed that 29 species of insect-pests were found to be associated with the vegetable crops (table 1). Among the insect pests, the maximum number of insect species were from order Lepidoptera (13) constituting 7 families, followed by Hemiptera (9), Coleoptera (3), Diptera (3) and Thysanoptera (1).

On okra, seven species of insect pests viz. *Bemisia tabaci* Genn., *Dysdercus cingulatus* Fb., *Aphis gossypii* Glover, *Earias vitella* F., *Pectinophora gossypiella* Saunders, *Sylepta derogata* Fab. were recorded. Out of these, leafhopper (*Empoasca devastans* Distant) was the most serious and was present on the crop throughout the growing period while red cotton bug, *D. cingulatus* Fabricius infested

the crop at ripening stage, which is in agreement with Nair (1986). Incase of cucurbits, besides hadda beetle, which was found to infest all cucurbits; however, its incidence was most serious on bitter melon, four more species of insect pests (*Raphidopalpa foveicollis* Lucas, *Bactocera cucurbitae* Coquillett, *aphis gossypii* Glover, *Bemisia tabaci* Gennadius) were recorded. Of which, red pumpkin beetle, *A. foveicollis* at leaf stage and fruit flies throughout the fruit development stage were most serious. Butani and Jotwani (1984) and Nair (1986) were also having similar observations.

Leucinodes orbonalis Guenee (Borer) was found to be the most serious pest of brinjal. Nair (1986) reported *L.orbonalis* Guenee and *E. Particella* Rag. as the major pest of the crop. Out of ten insect species viz. *Brevicoryne brassicae* L., *Lipaphis erysimi* Kalt., *Myzus persicae* Sulzer, *Plutella xylostella* Linn., *Agrotis ipsilon* Hufnagel, *Thysanoplusia orichalcea* Fabricius, *Pieris brassicae* Linn., *Hellula undalis* Fb., *Spilosoma obliqua* Walker, *Bagrada cruciferarum* which were recorded to infest cole crops; *P. brassicae* L. was the most common and serious pest. Butani and Jotwani (1984) reported seven insect species associated with these crops in India. Bhatia *et al.* (1995) reported six species as regular pests on cole crops.

Five pest species viz. *Macrosiphum pisi* Kalt., *Etiella zinckenella* Treit, *Phytomyza horticola* Goureau, *Helicoverpa armigera* Hb. and *Melanagromyza Phaseoli* Tryon were recorded to cause varying degree of damage on peas. However, leaf miner and pod borer were the most serious pest. In India, pod borers, stem fly, leaf miner and aphids were reported as major pests of this crop (Prasad *et al.*, 1984; Mahobe, 1986 and Atwal and Dhaliwal, 2002).

Fruit borer (*Helicoverpa armigera* Hubner) was the serious pest recorded to infest tomato along with other insect species viz. *Bemisia tabaci* Gennadius, *aphis gossypii* Glover, *Myzus persicae* Sulzer. As compared to earlier reports, which indicated over 25 insect species infesting the leave and fruits of chilli in South east Asia (Butani and Jotwani, 1984); *Aphis gossypii* Glover, *Bemisia tabaci* Gannadius, *Scirtothrips dorsalis* Hood., *Holotrichia consanguinea* Blanch and *Helicoverpa armigera* Hb. was

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Table 1: Insect pests found associated with vegetable crops in western U.P.

Crop	Common, Scientific Name	Order	Family	Occurrence	Incidence
Okra	Leaf roller, <i>Sylepta derogata</i> Fab.	Lepidoptera	Pyralidae	Occasional	Low
	White fly, <i>Bemisia tabaci</i> (Gennadius)	Hemiptera	Aleyrodidae	Regular	High
	Red cotton bug, <i>Dysdercus cingulatus</i> (Fabricius)	Hemiptera	Pyrrhocoridae	Regular	High
	Cotton jassid, <i>Amrasca biguttula biguttula</i> (Ishida)	Hemiptera	Cicadellidae	Regular	High
	Cotton aphid, <i>Aphis gossypii</i> Glover	Hemiptera	Aphididae	Regular	Low
	Spotted bollworm, <i>Earias vitella</i> F.	Lepidoptera	Noctuidae	Regular	Low
	Cotton pinkboll worm, <i>Pectinophora gossypiella</i> (Saunders)	Lepidoptera	Gelechidae	Regular	Low
Brinjal	Hadda beetle, <i>Epilachna vigintioctopunctata</i> (Fabricius)	Coleoptera	Coccinellidae	Regular	High
	White fly, <i>Bemisia tabaci</i> (Gennadius)	Hemiptera	Aleyrodidae	Regular	High
	Green peach aphid, <i>Myzus persicae</i> (Sulzer)	Hemiptera	Aphididae	Regular	Low
	Cotton aphid, <i>Aphis gossypii</i> (Glover)	Hemiptera	Aphididae	Regular	Low
	Stem borer, <i>Euzophera particella</i> Rag.	Lepidoptera	Pyralidae	Regular	High
	Shoot and fruit borer, <i>Leucinodes orbonalis</i> Guenee	Lepidoptera	Pyralidae	Regular	High
Cole crops	Cabbage aphid, <i>Brevicoryne brassicae</i> (Linnaeus)	Hemiptera	Aphididae	Regular	Low
	Mustard aphid, <i>Lipaphis erysimi</i> Kalt.	Hemiptera	Aphididae	Regular	Low
	Green peach aphid, <i>Myzus persicae</i> (Sulzer)	Hemiptera	Aphididae	Regular	Low
	Diamond back moth, <i>Plutella xylostella</i> (Linnaeus)	Lepidoptera	Plutellidae	Regular	Low
	Cut worm, <i>Agrotis ipsilon</i> (Hufnagel)	Lepidoptera	Noctuidae	Regular	Low
	Green semilooper, <i>Thysanoplusia orichalcea</i> (Fabricius)	Lepidoptera	Noctuidae	Regular	Low
	Cabbage butterfly, <i>Pieris brassicae</i> (Linnaeus)	Lepidoptera	Pieridae	Regular	High
	Cabbage borer, <i>Hellula undalis</i> Fb.	Lepidoptera	Pieridae	Regular	Low
	Bihar hairy caterpillar, <i>Spilosoma obliqua</i> Walker	Lepidoptera	Arctiidae	Occasional	Low
Painted bug, <i>Bagrada cruciferarum</i>	Hemiptera	Pentatomidae	Occasional	Low	
Cucurbits	Red pumpkin beetle, <i>Raphidopalpa foveicollis</i> (Lucas)	Coleoptera	Chrysomelidae	Regular	High
	Fruit fly, <i>Bactocera cucurbitae</i> (Coquillett)	Diptera	Tephritidae	Regular	High
	White fly, <i>Bemisia tabaci</i> (Gennadius)	Hemiptera	Aleyrodidae	Regular	Low

	Cotton aphid, <i>Aphis gossypii</i> (Glover)	Hemiptera	Aphididae	Regular	Low
	Hadda beetle, <i>Epilachna vigintioctopunctata</i> (Fabricius)	Coleoptera	Coccinellidae	Regular	High
Pea	Pea aphid, <i>Macrosiphum pisi</i> Kalt.	Hemiptera	Aphididae	Occasional	Low
	Pod borer, <i>Etiella zinckenella</i> (Treitschke)	Lepidoptera	Phycitidae	Regular	Low
	Pod borer, <i>Helicoverpa armigera</i> (Hubner)	Lepidoptera	Noctuidae	Occasional	Low
	Leaf miner, <i>Phytomyza horticola</i> (Goureau)	Diptera	Agromyzidae	Regular	High
	Stem fly, <i>Melanagromyza phaseoli</i> (Tryon)	Diptera	Agromyzidae	Regular	Low
Tomato	Fruit borer, <i>Helicoverpa armigera</i> (Hubner)	Lepidoptera	Noctuidae	Regular	High
	White fly, <i>Bemisia tabaci</i> (Gennadius)	Hemiptera	Aleyrodidae	Regular	High
	Cotton aphid, <i>Aphis gossypii</i> Glover	Hemiptera	Aphididae	Regular	Low
	Green peach aphid, <i>Myzus persicae</i> (Sulzer)	Hemiptera	Aphididae	Regular	Low
	Leaf caterpillar, <i>Spodoptera litura</i> Fb.	Lepidoptera	Noctuidae	Regular	Low
Chilli	Cotton aphid, <i>Aphis gossypii</i> Glover	Hemiptera	Aphididae	Regular	Low
	White fly, <i>Bemisia tabaci</i> (Gennadius)	Hemiptera	Aleyrodidae	Regular	High
	Chilli thrips, <i>Scirtothrips dorsalis</i> Hood.	Thysanoptera	Thripidae	Regular	High
	White grub, <i>Holotrichia consanguinea</i> (Blanch)	Coleoptera	Melolonthidae	Occasional	Low
	Fruit borer, <i>Helicoverpa armigera</i> Hb.	Lepidoptera	Noctuidae	Regular	Low

observed as the pest on chilli. Ahmed *et al.* (1987) also having similar observations.

Critical perusal of Table 1 reveals that though, a variety of insect species have been found associated with different vegetable crops in this region, yet the number of important pests which cause serious economic losses were very less. It was also found that the severity of different pests depends largely upon favourable climatic conditions and therefore, suitable management strategies have to be formulated keeping in view the time of severity of the pest.

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