



Survey of Insect-Pests of vegetables crops in Agricultural fields of district Gonda Uttar Pradesh, India

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Abstract

Field survey were conducted three year December 2019 to December 2022 to record the pest status on vegetable crops in agricultural fields of district-Gonda,Uttar pradesh. Among the herbivores insect-pests contains order-Hemiptera 6 species viz. *Aphis gossypii*, *Bemisia tabaci*, *Bagrada cruciferarum*, *Lipaphis erysimi*, *Dysdercus cingulatus* and *Myzus persicae*; Order-Lepidoptera 7 species vz. *Euzophera perticella*, *Etiella zinckenella*, *Helicoverpa armigera*, *Leucinodes orbonalis*, *Pectinophora gossypiella*, *Phthorimaea operculella*, *Pieris brassicae*; Order-Coleoptera contains 2 species viz. *Epilachna vigintiocto punctata* and *Raphidopalpa foveicollis*; order-Diptera contains one species viz. *Dacus cucurbitae* were damage to different vegetables crops during our field survey in this region.

Keywords: Agricultural fields, vegetable crops, Insect-pest status, Gonda (U.P.).

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Introduction

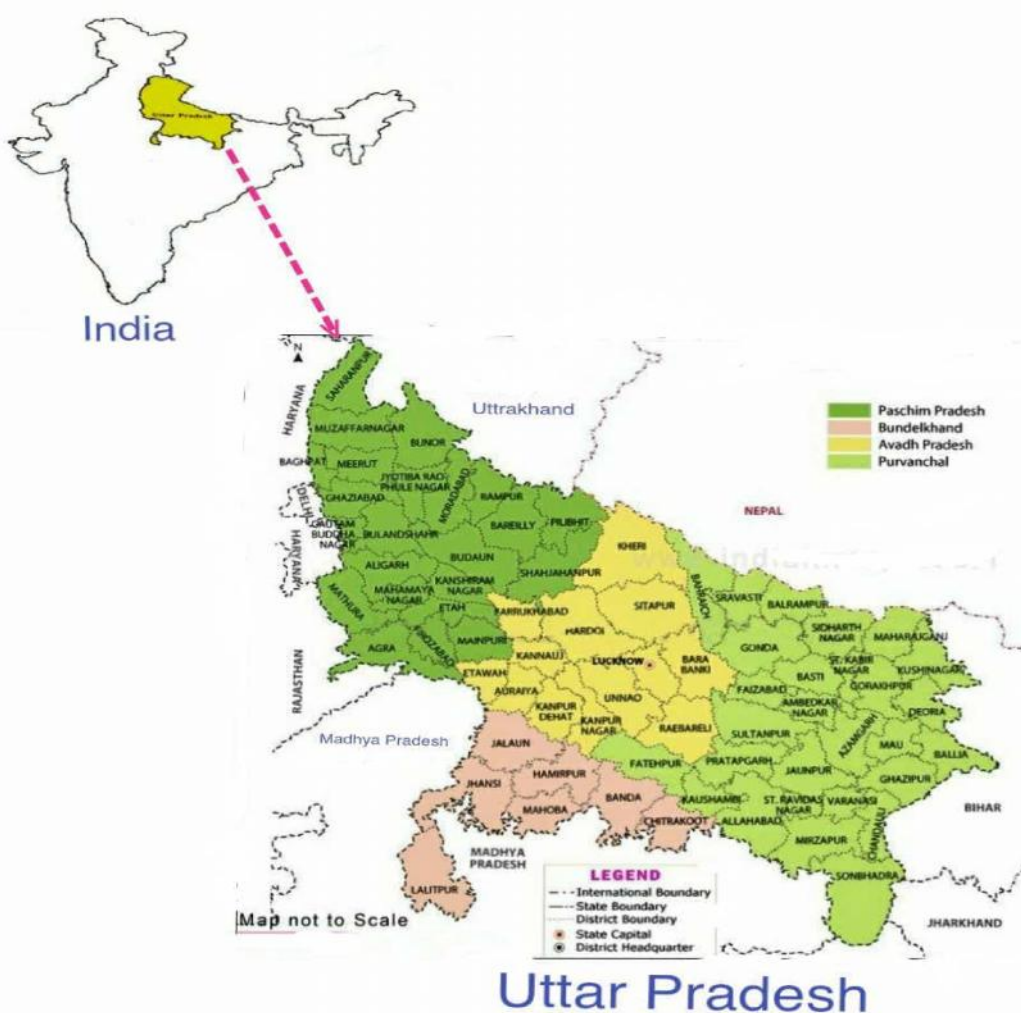
Almost all types of vegetable crops including leafy vegetables, pulse vegetables, cucurbits, cole crops and tubers crops etc. are grown in agricultural fields of district-Gonda, Uttar Pradesh. Many insect pests attack all these Vegetables crops and their intensity varies in time and space. In Uttar Pradesh, 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.

Location of study area: Gonda is situated at the junction of several roads, rail lines and is a trade centre for agricultural products. District Basti on the eastern boundary, Bahraich district in the

West, Balrampur district in the north, Ayodhya and Barabanki district in the south. In map, the district Gonda is situated between 26°47' and 27°20' north latitude and 81°30' and 82°46' east longitude. The total area of district is 4003 sq km and It is situated 120 km northeast of the state capital Lucknow (Map-1).

Map-1: Location of study area in Uttar Pradesh



Materials and Methods

Extensive survey were conducted in different areas of this region during different period of year and on different vegetables crops growth stages. The study were undertaken over a period of three years that is from December 2019 to December 2022. The insect pests of major growing

vegetables crops were recorded. The immature stage 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 immature were reared in the laboratory on the host from which they were collected for the adult emergence. Adults were killed and preserved for identification (Mathur and Upadhyay 1996, Kumar and Nigam 1997).

Results and Discussion

**Table-1: List of Insect pests found on Vegetables crops in agricultural fields of district-Gonda
Uttar Pradesh, India**

(Data of December 201 9 to December2022)

S. N.	Scientific Name	Common Name	Vegetable Crops	Order	Family	Occurrence
1	<i>Aphis gossypii</i> (Glover,1877)	Cotton aphid, Melon aphid	Brinjal, Cucurbits, Chilli, Tomato and Okra	Hemiptera	Aphididae	Regular
2	<i>Bemisia tabaci</i> (Gennadius,1889)	White fly	Brinjal, Cucurbits, Chilli, Okra and Tomato	Hemiptera	Aleyrodidae	Regular
3	<i>Bagrada cruciferarum</i> (Kirkaldy,1909)	Painted bug	Cole crops	Hemiptera	Pentatomidae	Occasional
4	<i>Dacus cucurbitae</i> (Coquillett,1849)	Fruit fly	Cucurbits	Diptera	Tephritidae	Regular
5	<i>Dysdercus cingulatus</i> (Fabricius,1775)	Red cotton bug	Okra	Hemiptera	Pyrrhocoridae	Regular
6	<i>Epilachna vigintiocto punctata</i> (Fabricius,1775)	Hadda beetle	Brinjal	Coleoptera	Coccinellidae	Regular
7	<i>Euzophera perticella</i> (Ragonot,1888)	Stem borer	Brinjal, Cucurbits	Lepidoptera	Pyralidae	Regular
8	<i>Etiella zinckenella</i> (Treitschke,1832)	Pod borer	Pea	Lepidoptera	Pyralidae	Regular
9	<i>Helicoverpa Or Heliothis armigera</i> (Hubner,1808)	Pod borer, Fruit borer	Pea, Gram Tomato	Lepidoptera	Noctuidae	Occasional
10	<i>Leucinodes orbonalis</i> (Guenee,1854)	Shoot and fruit borer	Brinjal, Tomato, Potato	Lepidoptera	Crambidae	Regular
11	<i>Lipaphis erysimi</i> (Kaltenbach,1843)	Mustard aphid	Cole crops	Hemiptera	Aphididae	Regular

12	<i>Myzus persicae</i> (Sulzer,1776)	Green peach aphid	Brinjal, Cole crops, Tomato	Hemiptera	Aphididae	Regular
13	<i>Pectinophora gossypiella</i> (Saunders,1844)	Cotton pink boll worm	Okra	Lepidoptera	Gelechiidae	Regular
14	<i>Phthorimaea operculella</i> (Zeller,1873)	Potato tuber moth	Brinjal, Potato and Tomato	Lepidoptera	Gelechiidae	Regular
15	<i>Pieris brassicae</i> (Linnaeus,1758)	Cabbage butterfly	Cole crops	Lepidoptera	Pieridae	Regular
16	<i>Raphidopalpa foveicollis</i> (Lucas,1849)	Red pumpkin beetle	Cucurbits	Coleoptera	Chrysomelidae	Regular

Fields surveys showed that 16 species of insect-pests were found to be associated with vegetable crops (Table-1). Among the insect-pests were found from order-Hemiptera contains 6 species, order-Lepidoptera contains 7 species, Coleoptera contains 2 species and Diptera contains 1 species which attacking on Vegetables crops.

Insect-pests found on vegetable crops contains *Aphis gossypii* damage to both nymphs and adults and suck the plant sap. They occur in the tender shoots and lower leaf surfaces on brinjal, cucurbits, chilli, tomato and okara plants, *Bemisia tabaci* damage is caused by both nymphs and adults, which can damage to brinjal, cucurbits, chilli, okra and tomato plants in two ways firstly by sucking the sap and secondly by excreting honey dew on which sooty mold grows; *Bagrada cruciferarum* nymphs and adults cause the damage to the cole crops by sucking the sap from the leaves, stems and tender parts of the plants, attacked plants look sickly and dry up or may get stunned in growth. The black fungus is also attracted at the feeding point due to which brown or black spots are seen on the leaves; *Lipaphis erysimi* nymphs and adults suck the sap from leaves, buds and pods, cause curling may occur in infested leaves and at advanced stage plants may wither and die, cole plants remain stunted and sooty molds grow on the honey dew excreted by the insects; *Dysdercus cingulatus* nymphs and adults sucking the sap of the okra plants; *Myzus persicae* aphids sucking the sap from the brinjal, cole crops, tomato and contaminate the host with

honey dew and cast skins. The major damage caused by green peach aphid is through transmission of plant viruses.

Euzophera perticellarvae bores in to the nearest tender shoot, flower and fruits of brinjal and cucurbits plants; *Etiella zinckenella* caterpillar is feed on floral parts, newly formed pods and seeds inside the developing pods of pea plants; *Helicoverpa armigera* larva is feed on flowers and fruits of gram, pea and tomato and thus high economic damage; *Leucinodes orbonalis* larva is bore in to the brinjal, potato and tomato plants shoots and fruits; *Pectinophora gossypiella* is a serious pest of cotton and also attacks on okra and other malvaceous plants, in the younger crops larvae bore in to tender squares and feed with in resulting in to drying of the terminal shoots; *Phthorimaea operculella* larvae feed on potato leaves, stems, petioles and larvae boring tunnels in tubers, larvae depositing their excreta make tubers unfit for consumption; *Pieris brassicae* caterpillars feed upon leaf surface of the cole plants and skeletonize them; *Epilachna vigintiocto punctata* and *Raphidopalpa foveicollis* larvae and adults feed on the leaves, flowers and fruits of cucurbits, it produces large holes in the plant tissues causing growth retardation and eventually death of the plant; *Dacus cucurbitae* maggots larva feed on the pulp of fruits of lauki, karela, taroi and kaddu, infested fruit starts rotting and ultimately drop down were survey in our agricultural fields (Table-1).

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. In India, pod borer, stem fly, leaf minor and aphids were reported as major pests of this crops (Prasad et.al.1984, Mahobe, 1986, Atwal and Dhaliwal,2002). Ahmad et.al. (1987) and Muhammad Sarwar (2014) also having similar observation.

Lepidoptera insect-pests were the most serious pests and was present on the crops throughout the growing period while order-Hemiptera second infested crops in this region, which is agreement with Nair (1986).In case of Hadda beetle, which was found to infest all cucurbits, however, its incidence was found most serious on better gourd, Red pumpkin beetle and *Raphidopalpa 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 (borer) was found to be the most serious pest of brinjal. Nair (1986) reported *Leucinodes orbonalis* and *Euzophera perticella* as the major insect-pests of the crops. Fruit borer (*Helicoverpa armigera*) was the serious pest recorded to infest tomato along with other insect species viz. *Bemisia tabaci*, *Aphis gossypii*, *Myzus persicae*. As compared to earlier reports, which indicated over 25 insect species infesting the leaves and fruits of chilli in South east Asia(Butani and Jotwani,1984).

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

Conclusion

Vegetable production is four year-round activity in agricultural fields of district-Gonda, Uttar Pradesh. Insect-pests and diseases are important constraints to vegetables production. Knowledge of Vegetables crops disease constitutes a major obstacle in vegetable production systems. The findings of the study would be helpful to understand the constraints faced by the farmers in adoption of recommended management practice of major insect-pests of cultivated vegetables.

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