



A Survey of Some Insect-Pests of Cultivated vegetables in Devipatan division of Uttar Pradesh, India

R. B. Tripathi

P.G. Department of Zoology, M.L.K.P.G. College, Balrampur (U.P.), India

E-mail: drbtripathi.77@gmail.com

Abstract

Field survey were conducted four years January 2017 to May 2021 to record the pest status on vegetable crops in Devipatan division of Uttar Pradesh. Among the herbivores insect-pests contains order-Lepidoptera 13 species viz. *Erias vitella*, *Euzophera perticella*, *Etiella zinckenella*, *Hellula undalis*, *Helicoverpa armigera*, *Leucinodes orbonalis*, *Pectinophora gossypiella*, *Phthorimaea operculella*, *Pieris brassicae*, *Plutella xylostella*, *Spilosoma obliqua*, *Spodoptera litura*, *Thysanoplusia orichalcea*; order- Hemiptera 7 species viz. *Aphis gossypii*, *Bemisia tabaci*, *Brevicoryne brassicae*, *Bagrada cruciferarum*, *Dysdercus cingulatus*, *Lipaphis erysimi* and *Myzus persicae*; order-Coleoptera contains 3 species viz. *Epilachna vigintiocto punctata*, *Holotrichia consanguinea* 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: Devipatan division, vegetable crops, Insect-pests status and Uttar Pradesh.

ARTICLE INFO

Article History:

Received 5th October, 2021

Received in revised form 30th October, 2021

Accepted 15th November, 2021

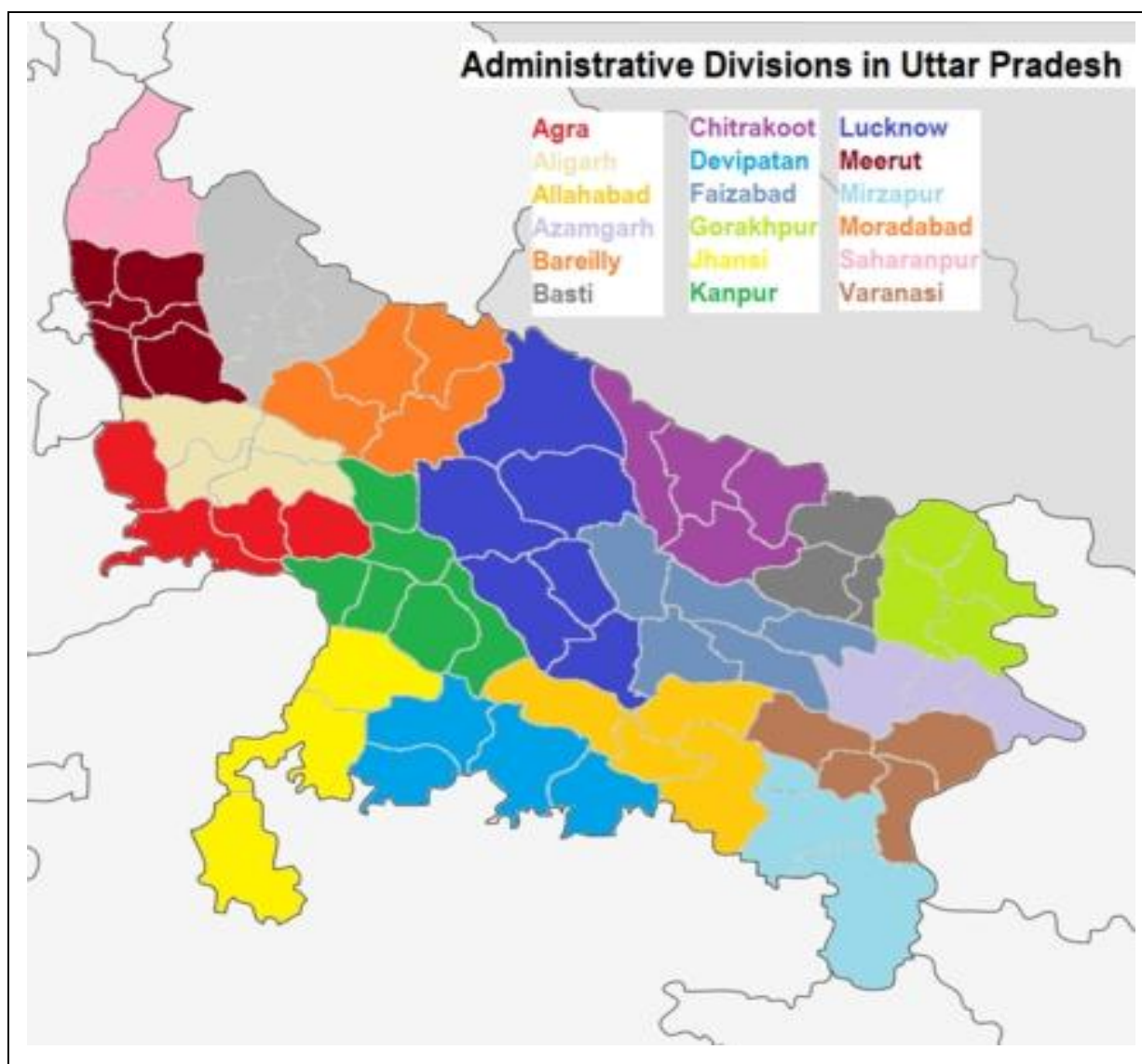
Published online 30th November, 2021

Introduction

Almost all types of vegetable crops including leafy vegetables, pulse vegetables, cucurbits, cole crops and tubers crops etc. are grown in Devipatan division of 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: Devipatan division is an administrative geographical unit of Uttar Pradesh, the division consists of district Gonda, Bahraich, Balrampur and Shravasti. District Gonda is headquarter of this division (Map-1).



Map-1: Location of Devipatan division 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 four years that is from January 2017 to May 2021. 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 Upadhayay 1996, Kumar and Nigam 1997).

**Table-1: List of Insect-pests found on Vegetables crops in Devipatan division of Uttar Pradesh, India
(Data of January 2017 to May 2021)**

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>Brevicoryne brassicae</i> (Linnaeus,1758)	Cabbage aphid	Cole crops	Hemiptera	Aphididae	Regular
4	<i>Bagrada cruciferarum</i> (Kirkaldy,1909)	Painted bug	Cole crops	Hemiptera	Pentatomidae	Occasional
5	<i>Dacus cucurbitae</i> (Coquillett,1849)	Fruit fly	Cucurbits	Diptera	Tephritidae	Regular
6	<i>Dysdercus cingulatus</i> (Fabricius,1775)	Red cotton bug	Okra	Hemiptera	Pyrrhocoridae	Regular
7	<i>Erias vitella</i> (Fabricius,1794)	Spotted boll worm	Okra	Lepidoptera	Noctuidae	Regular
8	<i>Epilachna vigintiocto punctata</i> (Fabricius,1775)	Hadda beetle	Brinjal	Coleoptera	Coccinellidae	Regular
9	<i>Euzophera perticella</i> (Ragonot,1888)	Stem borer	Brinjal, Cucurbits	Lepidoptera	Pyralidae	Regular
10	<i>Etiella zinckenella</i> (Treitschke,1832)	Pod borer	Pea	Lepidoptera	Pyralidae	Regular
11	<i>Hellula undalis</i> (Fabricius,1794)	Cabbage borer	Cole crops	Lepidoptera	Crambidae	Regular
12	<i>Helicoverpa</i> Or <i>Heliothis armigera</i> (Hubner,1808)	Pod borer, Fruit borer	Pea, Gram Tomato	Lepidoptera	Noctuidae	Occasional
13	<i>Holotrichia consanguinea</i> (Blanchard,1850)	White grub	Chilli	Coleoptera	Scarabaeidae	Occasional
14	<i>Leucinodes orbonalis</i> (Guenee,1854)	Shoot and fruit borer	Brinjal, Tomato, Potato	Lepidoptera	Crambidae	Regular
15	<i>Lipaphis erysimi</i> (Kaltenbach,1843)	Mustard aphid	Cole crops	Hemiptera	Aphididae	Regular

16	<i>Myzus persicae</i> (Sulzer,1776)	Green peach aphid	Brinjal, Cole crops, Tomato	Hemiptera	Aphididae	Regular
17	<i>Pectinophora gossypiella</i> (Saunders,1844)	Cotton pink boll worm	Okra	Lepidoptera	Gelechiidae	Regular
18	<i>Phthorimaea operculella</i> (Zeller,1873)	Potato tuber moth	Brinjal, Potato and Tomato	Lepidoptera	Gelechiidae	Regular
19	<i>Pieris brassicae</i> (Linnaeus,1758)	Cabbage butterfly	Cole crops	Lepidoptera	Pieridae	Regular
20	<i>Plutella xylostella</i> (Linnaeus,1758)	Diamond back moth	Cole crops	Lepidoptera	Plutellidae	Regular
21	<i>Raphidopalpa foveicollis</i> (Lucas,1849)	Red pumpkin beetle	Cucurbits	Coleoptera	Chrysomelidae	Regular
22	<i>Spilosoma obliqua</i> (Walker,1855)	Bihar hairy caterpillar	Cole crops	Lepidoptera	Erebidae	Occasional
23	<i>Spodoptera litura</i> (Fabricius,1755)	Leaf caterpillar	Tomato	Lepidoptera	Noctuidae	Regular
24	<i>Thysanoplusia orichalcea</i> (Fabricius,1775)	Green semilooper	Cole crops	Lepidoptera	Noctuidae	Regular

Results and Discussion

Fields surveys showed that 24 species of insect-pests were found to be associated with vegetable crops (Table-1). Among the insect-pests were found from order-Lepidoptera contains 13 species, Hemiptera contains 7 species, Coleoptera contains 3 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; *Brevicoryne brassicae* was found on both lower and upper leaf surface, sucking sap from their cole crops, infested seedlings may become stunted, distorted, continued feeding on mature plants causes wilting, yellowing and general stunting the plants; *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; *Dacus cucurbitae* maggots larva feed on the pulp of fruits of lauki, karela, taroi and kaddu. The infested fruit starts rotting and ultimately drop down; *Dysdercus cingulatus* nymphs and adults sucking the sap of the okra plants; *Earias vitella* bores in to young shoots and fruits of okra; *Spilachna vigintiocto punctata* is a serious pest of brinjal but have also liking for potato and tomato. The grubs and adults scab out and feed on the green tissues of the leaves and skeletonize which ultimately dries up; *Euzophera perticella* larvae 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; *Hellula undalis* caterpillar is very harmful to young plants caused stunting or killing them of cole crops; *Heliothis armigera* larva is feed on flowers and fruits of gram, pea and tomato and thus high economic damage;

Holotrichia consanguinea nymphs and adults damage the crops, attacked plants are stunted leaves dropped, fresh buds become brittle and drop down of chilli plants; *Leucinodes orbonalis* larva is bore in to the brinjal, potato and tomato plants shoots and fruits; *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; *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; *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 leave surface of the cole plants and skeletonize them; *Plutella xylostella* damage is caused by the larvae that dig tunnels in the leaf tissues of cole plants, Irregular patches are visible can occasionally be left intact, creating a windowing effect; *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; *Spilosoma obliqua* larvae feed gregariously on chlorophyll mostly on the under surface of the leaves, due to which the leaves look like brownish-yellow in colour and the leaves of the plant give an appearance of net or web on cole crops; *Spodoptera litura* larvae feed on the chlorophyll on the leaves of tomato and the eaten leaves give the appearance of whitish-yellow web; *Thysanoplusia orichalcea* larvae feed on the lower surface of cole crops leaves and results in the appearance of windows on leaves were recorded in Devipatan division of Uttar Pradesh(Muhammad Sarwar,2014).

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). Ahmed et.al. (1987) 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 bitter melon, Red pumpkin beetle and *Raphidopalpa foveicollis* at leaf stage and fruit flies throughout the fruit development stage were most serious. Butani and Jotwani(1984),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 the Devipatan division of Uttar Pradesh. Insect-pests and diseases are important constraints to vegetables production. Knowledge of Vegetables crops diseases 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.

References

- 1: Ahmad, K., Mohammad, M.G. and Mutthi, N.S.R.(1987):Yield losses due to various pests I hot pepper. Capsicum Newsletter. 6:83-84.
- 2: Anonymous(2000):Indian horticulture database, National Horticulture Board, Ministry of Agriculture, Govt. of India, New Delhi, India. pp.225.
- 2: Atwal and Dhaliwal (2002): Agricultural pests of South Asia and their management. Kalyani Publishers, Ludhiana, India.pp.487.
- 3: Bhatia, R., Gupta, D. and Pathania, N.K. (1995): Host preference and population buildup of key pests of Cole crops, J. Insect Science, 8(1): 59-62.
- 4: Butani, D.K. and Motwani, M.L.(1984):Insects in Vegetables. Periodical Expert Book Agency, Delhi, India, pp.356.
- 5: Kumar, A.and Nigam, M.H. (1997): A text book of Economic and Applied Entomology, Emkay Publications(Delhi), India.pp.1-351.
- 6: Mahobe, J. (1986): Breeding cut worm resistance in pests Veg. Sci.13(2):365-66.
- 7: Mathur, Y.K. and Upadhayay, K.D. (1996):A Text Book of Entomology, Aman Publishing House, Meerut (U.P.), India, pp.1-318.
- 8: Muhammad Sarwar(2014): Some insect-pests (Arthropoda: Insecta)of summer vegetables, their identification, occurrence, damage and adoption of management practices .International Journal of Sustainable Agricultural Research, 1(4):108-117.
- 9: Nair, M.R.G.K.(1986):Insects and Mites of crops in India .2nd Edn. ICAR, New Delhi, India, pp.408.
- 10: Prasad, D., Singh, K.M., Katiyar, R.N. and Singh, R.N.(1984): Incidence of insect-pests in early maturing high yield variety of pea (*Pisum satavin*, Linn.).Indian J.Ent., 46(3): 353-62.

Access this Article in Online	
	Website: www.ijarbs.com
	Subject: Entomology
Quick Response Code	
DOI: 10.22192/ijarbs.2021.08.11.001	

How to cite this article:

R. B. Tripathi. (2021). A Survey of Some Insect-Pests of Cultivated vegetables in Devipatan division of Uttar Pradesh, India. Int. J. Adv. Res. Biol. Sci. 8(11): 1-6.
DOI: <http://dx.doi.org/10.22192/ijarbs.2021.08.11.001>