



INSECT PESTS OF ZUCCHINI AND THEIR NATURAL ENEMIES

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ABSTRACT

Zucchini (*Cucurbita pepo* L.) is a trending crop for every health enthusiast today. The market demands for quality zucchini, bearing the best shape and size, free from all blemishes have gone sky high recently. Nevertheless, this cucurbitaceous crop is susceptible to many pests and diseases during its growth period, including its post-harvest life, which bring down the yield both in terms of quality and quantity. The time and intensity of the incidence of the pest varies greatly with crop growth stages. Therefore, an investigation was carried out during 2021-2022, for studying the incidence of various insect pests' of zucchini and their natural enemies under naturally ventilated polyhouse condition at the experimental farm of Department of Horticulture, Assam Agricultural University, Jorhat, Assam, India. Five insect pests viz., *Aleurodicus dispersus* Russell, *Aphis gossypii* Glover, *Aulacophora foveicollis* Lucas, *Bactrocera cucurbitae* Coquillett and *Pseudodendrothrips* species Niwa were found to be very active from October, 2021 till March, 2022. Among them, *A. dispersus* and *A. gossypii* caused viral infection (zucchini yellow vein mosaic) in the early vegetative stage whereas *B. cucurbitae* caused severe damage by distorting and malformation of fruits during the flowering and fruiting stage. Two predators, namely *Coccinella transversalis* F. and *Coccinella septempunctata* L. were abundant during the growing period which fed on these insect pests.

Key words: *Cucurbita pepo*, diseases, insects, mosaic, natural enemy, polyhouse, pests, predators, quality, yield, zucchini, *Pseudodendrothrips*

Zucchini (*Cucurbita pepo* L.) or summer squash is an exotic vegetable that has recently been popularized in India. It is also called as vegetable marrow, field pumpkin in various regions of the world. Zucchini which belongs to the family Cucurbitaceae is a quick-growing and high-yielding cucurbit that is suitable for production throughout India (Bhattacharjee, 2022), and it is a source of vitamins and minerals (Bose et al., 2000), and flavanoids, antioxidants such as carotenes, lutein, and zeaxanthins (Kalaivanan et al., 2022). In India, various insect pests have been associated with zucchini out of which whitefly (*Aleurodicus dispersus* Russell), aphids (*Aphis gossypii* Glover) (Tripathi et al., 2020), thrips (*Pseudodendrothrips* sp.), red pumpkin beetle (*Aulacophora foveicollis* Lucas) (Arivoli et al. 2020) and melon fly (*Bactrocera cucurbitae* Coquillett) are the major ones. The infestation of aphids and whitefly during vegetative stage (Abubakar et al., 2022) causes viral incidence and results in the death of plants (Sun et al., 2022). This study investigated the various insect pests and their natural enemies of zucchini in Jorhat, Assam.

MATERIALS AND METHODS

This study was done under naturally ventilated polyhouse conditions in the Experimental Farm, Department of Horticulture, Assam Agricultural University, Jorhat (26°43'N, 94°11'E) from October 2021 to March 2022. The observations were done on the randomly selected plants at 15 days intervals. Regular inspection and field monitoring were carried out at various crop growth stages and insect pests were collected and identified. The incidence of aphids and whiteflies was assessed using the plant inspection method (Sridhar et al., 2020) with samples taken at 15 days intervals with 25 plants selected randomly excluding the corners. The incidence of insects was estimated by counting the number of infected shoots (Mani et al., 2008). To determine the intensity of the attack of whitefly and aphids weekly interval counts of insects/ leaves (top to bottom approach) was used (Chikkaswamy and Paramanik, 2014). For melon fly and red pumpkin beetle, the plant inspection method was followed (Regmi and Paudel, 2020). For thrips, counting of average/ leaf at 4th, 5th and 7th leaves were

done weekly. The predators were recorded by larval counting or counting adults in randomly selected plants (Singh and Rai, 2000).

RESULTS AND DISCUSSION

The results reveal that during 2021-2022 there were five insect pests occurring in zucchini. These include thrips *Pseudodendrothrips mori* (Niwa), whitefly *A. dispersus* Russel, aphids *A. gossypii* Glover, red pumpkin beetle *A. foveicollis* Lucas and melon fly *B. cucurbitae* Coquillett. The natural enemies seen *Coccinellids* viz., *Coccinella septempunctata* L. and *C. transversalis* F. Relative abundance of insect pests in zucchini along with their natural enemies is given in Table 1. Maximum abundance of *A. dispersus* (39.62%) is seen followed by *A. gossypii* (24.88), *B. cucurbitae* (12.69%), *Pseudodendrothrips* sp. (8.02%) and *A. foveicollis* (5.06%). The maximum natural enemies' abundance was seen in *C. transversalis* (4.99%) and *C. septempunctata* (4.74%). Pests like *A. dispersus* and *A. gossypii* cause viral infection (zucchini yellow vein mosaic) in the early vegetative stage (Ullah et al., 2022) whereas *B. cucurbitae* cause damage during the flowering and fruiting stage (Parajuli et al., 2020).

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AUTHOR CONTRIBUTION STATEMENT

D Bhattacharjee wrote the manuscript and conducted the experiment. Other authors helped during the framing and carrying out of the experiment.

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CONFLICT OF INTEREST

No conflict of interest.

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Table 1. Relative abundance of insect pests of zucchini and their natural enemies (2021-2022)

Date of sampling	<i>A. dispersus</i> (no./ shoot)	<i>A. gossypii</i> (no./ shoot)	<i>P.</i> <i>sp.</i> (no./ leaves)	<i>A. foveicollis</i> (no./ plant)	<i>B. cucurbitae</i> (no./ plant)	<i>C. septempunctata</i> (no./ plant)	<i>C. transversalis</i> (no./ plant)
15 October, 2021	34.50	24.80	6.62	1.17	0.34	0.84	0.22
31 October	33.50	18.55	5.44	1.65	0.56	0.36	0.56
15 November	41.66	21.46	4.12	1.37	0.78	0.88	0.88
30 November	35.41	15.41	4.09	1.64	1.57	1.57	0.91
15 December	14.37	11.20	4.07	2.11	1.75	1.35	1.85
31 December	9.02	12.24	2.11	2.45	1.97	1.77	1.37
15 January	4.67	6.62	2.28	4.56	2.94	1.84	1.34
31 January	8.54	3.44	3.89	2.41	5.56	2.14	2.69
15 February	4.28	3.12	1.87	1.67	8.80	2.22	4.17
28 February	3.89	3.09	1.75	2.55	10.64	4.39	4.25
15 March	1.87	1.07	1.67	1.46	12.65	3.21	3.56
30 March	2.75	1.11	1.44	1.76	14.75	2.71	2.65
Mean	16.21	10.18	3.28	2.07	5.19	1.94	2.04
Relative abundance (%)	39.62	24.88	8.02	5.06	12.69	4.74	4.99

*Mean of 25 samples

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