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Studies on status of major insect pests of chilli in Marathwada region

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Abstract

A survey experiment to assess the status of major pest of chilli in Marathwada region was conducted during 2016 in all major chilli growing areas. During the survey field were selected randomly and the same field is visited twice in a season to record the infestation of pest. For this purpose fields were sampled from each Taluka by taking it as unit for chilli growing areas following standard survey procedure i.e. Data on pest infestation was recorded from five random spots in each field selecting five random plant from it which can be representative of all the cropped area for sucking pests and fruit borer. It is observed that thrips population was ranged between 1.84 thrips/ leaf (Bhokardan tahasil) to 8.68 thrips/ leaf (Dharmabad tahasil). This suggests the moderate to high thrips infestation on chilli was recorded in Marathwada. The whitefly population across all location was ranged between 2.18 whiteflies/leaf to 5.68 whiteflies/leaf. Least infestation was observed in Latur district in Renapur tahasil and it's peak was noticed in Nanded district in Dharmabad tahasil. Aphid incidence was noticed in this region, but was confined to Parbhani, Hingoli and Nanded districts only and in all other region it was completely absent in both season and ranged from 0.00 to 8.64. Mites infestation on chilli was uniform in all locations and it was also noticed at later stage of the crop in the seasons and it was ranged in between 2.02 to 8.86. In case of fruit borer very less infestation i.e.0.00 to 1.80 larvae/ plant was recorded during 2016.

Keywords: Chilli, fruit borer, whitefly, thrips, aphids and mites

Introduction

India is globally known as "Land of Spices" and chilli is one of the prime spice in our country it was grown over an area of 774.9 thousand hectares, with a production of 1492.10 thousand tonnes and a productivity of 1.93 t/ha in 2015-16^[1]. In India Almost all states in India grows this crop, with Andhra Pradesh having the most land, followed by Telangana, Karnataka, West Bengal, Gujarat, and Maharashtra. Nagpur, Jalgaon, Nashik, Nanded, Nandurbar, Palghar, Pune, Jalana, Aurangabad, and Amaravati are the major green chilli growing districts in Maharashtra State, with an area of 99.50 thousand ha, annual production of 45.60 thousand tonnes, and productivity of 0.46 t/ha, which is quite low when compared to national (1.93 t/ha) and global. (1.86 t/ha) averages^[5].

The major reason which attributes to low productivity of chilli is infestation of insect pests and diseases. More than 100 pest were recorded on chilli in India but about 53 species of insects and mites have been reported to cause economic loss to chilli in India. Among sucking pest like aphids, thrips, whiteflies, plant bugs, mites and foliage and fruit feeder and cutworms are major pest whereas other pests minor^[10]. Thrips is one of the dominant pest among the different insect of chilli which can cause yield losses up to 50 to 90 per cent^[4, 11, 7]. On the similar lines Reddy and Reddy (1999)^[8] reported fruit borers as major pest which can do damage up to 90 per cent. The yield of green chilli is also affected more or less by the attack of whitefly, aphid, jassid, and mite under field conditions^[2]. Taking in to consideration above facts present studies were designed to know the status of sucking pest and fruit bore in Marathwada region.

Material and Methods

Survey of major pests of chilli in Marathwada region

During the survey field were selected randomly and the same field is visited twice in a season to record the infestation of pest. For this purpose fields were sampled from each Taluka by taking it as unit for chilli growing areas following standard survey procedure i.e. Data on pest infestation was recorded from five random spots in each field selecting five random plant

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from it which can be representative of all the cropped area for sucking pests and fruit borer. Observation for sucking pest was recorded from three leaves from each plant i.e. one each from top, middle and bottom and then mean of the reading was worked out and data is given in per leaf and for fruit

borer total count from the plant was recorded. Data so collected was then subjected to draw mean population and then mean population of sucking pest and fruit borer on Tahsil level was worked out and final figure were used to assess sucking pest and fruit borer status on chilli in the region.

Table 1: Chilli growing areas of Marathwada surveyed during 2016-17

Sr. No.	Districts	Tahsils	No. of Fields	Period (SMW)
I. Scarcity zone				
1	Aurangabad	Gangapur	5	40&50
		Vaijapur	4	40&50
II. Assured Rainfall zone				
1.	Aurangabad	Phulambri	2	40&50
		Sillod	8	42&51
2	Hingoli	Sengaon	3	42&51
3	Jalna	Ambad	3	40&50
		Bhokardan	4	40&50
		Ghansawangi	5	40&50
4	Latur	Ahmadpur	4	43&52
		Renapur	6	43&52
5	Nanded	Biloli	5	42&51
		Deglur	4	42&51
		Dharmabad	7	42&51
		Naigaon	4	42&51
6	Parbhani	Gangakhed	4	42&51
		Parbhani	4	42&51
		Purna	5	42&51
1.	Hingoli	Basmat	3	42&51
2	Nanded	Mudkhed	3	42&51
		Umri	6	42&51

Results and Discussion

Survey of major insect pests of chilli was carried out in chilli growing areas of all the meteorological zones of Marathwada region of Maharashtra state. Two visits were made to same field at vegetative and reproductive phase during survey.

During 2016, thrips population was noticed throughout crop growth period but its incidence in vegetative stage was more as compared to reproductive stage. It was observed as a prominent pest across all the location surveyed as moderate to high thrips infestation on chilli in Marathwada was noticed during survey in both the years. Thrips population during survey was ranged between 1.84 thrips/leaf in Bhokardan to 8.68 thrips/ leaf in Dharmabad tahasil.

Whitefly infestation on chilli crop in Marathwada region was also prominent and more or less uniform at all location but its presence was noticed only up to sixty days and thereafter it was decreased gradually and in some locations chilli crop was completely free from whitefly infestation during 50th, 51st and 52nd SMW. The whitefly population across all locations was ranged between 2.18 to 5.68 whiteflies/leaf. The least infestation was observed in Latur district in Renapur tahasil and peak was noticed in Nanded district in Dharmabad tahasil during 2016-17.

Aphid infestation on chilli crop also noticed during survey, but it was confined to Parbhani, Hingoli and Nanded districts and there was no infestation was recorded in other districts in both years. The infestation was ranged from 0.00 to 8.64 aphids/leaf in 2016-17. The maximum infestation was observed in the areas of Parbhani tahasil in Parbhani district. Aphid population was not noticed up to first 60 days after transplanting.

Mites infestation was noticed in the range between 2.02 to 8.86 mites/ leaf during 2016-17 on chilli during survey maximum infestation of mites i.e. 8.86 mites/ leaf was

recorded at Dharmabad and Naigaon tahasil of Nanded district, respectively and lowest number of mites was observed at Bhokardan tahasil of Jalana and Phulambri tahasil of Aurangabad in 2016-17.

The larval infestation of fruit borer was observed ranged between 0.00 to 1.80 larvae/Plant during 2016-17. Infestation of fruit borer was not noticed in Ambad and Bokhardan tahasil of Jalana district and it was maximum in Ahamdapur tahasil in latur district during 2016-17. Bokhardan tahasil of Jalana district recorded least pest infestation than all other region due to the protected cultivation of chilli.

The present results of the study are discussed in the light of scientist who also reported presence of pest over seasons at different locations during survey. Manjunatha *et al.*, (2001) [6] who reported maximum thrips count ranged from 0 to 7.80 / leaf with up to 92 per cent upward leaf curling in Hukkeri, Mahalingapur and Mudhol, and other places it was 0 to 5.6 thrips / leaf with up to 68 per cent up ward leaf curling. Yellow mite counts ranged from 0 (at Mualkod of Bijapur) to 20.40/leaf (at Eklaspur of Raichur) with 72 per cent down ward leaf curling. Singh *et al.* (2004) [9] recorded incidence of fruit borer, mite, aphid and whitefly on hybrid sweet pepper under protected condition (Net house) in India. It was not observed in September - March crop under protected condition, whereas 40 per cent incidence was noticed in open field condition. The incidence was low (13.78%) in green house as compared to open field (48.57%).

Asma and Hanumantharaya (2015) [3] took the the survey on chilli in summer 2013-14 on insect, mite pests and their natural enemies at selected talukas of Chikmagalur district (Mudigere, Chikmagalur and Kadur), Karnataka, India mites/ leaf. Among the insect and mite pests reported, thrips, mites and fruit pests reported in major form under irrigated chilli plots during the survey.

Table 2: Insect pests status on chilli in Marathwada (2016)

Sr. No.	Districts	Taluka	Visit (No)	Thrips/leaf	Whitefly/leaf	Aphids/leaf	Mites/leaf	Fruit borer/Plant	SMW of Visit
Zone-I									
1	Aurangabad	Gangapur	5	3.24	2.84	0.00	4.32	0.80	40&50
		Vaijapur	4	2.42	2.32	0.00	4.48	0.60	40&50
Mean			5	2.83	2.58	0.00	4.40	0.70	
Zone-II									
1.	Aurangabad	Phulambri	2	4.08	2.48	0.00	6.02	0.20	40 50
		Sillod	8	4.84	3.42	0.00	8.42	0.40	42&51
2.	Hingoli	Sengaon	3	2.32	3.62	0.00	8.00	0.20	42&51
3.	Jalna	Ambad	3	3.26	3.02	0.00	8.06	0.00	40&50
		Bhokardan	4	1.84	3.24	0.00	2.02	0.00	40&50
		Ghasawangi	5	2.56	2.86	0.00	2.46	1.20	40&50
4.	Latur	Ahmadpur	4	3.38	2.48	0.00	4.84	1.80	43&52
		Renapur	2	5.84	2.18	0.00	5.86	1.00	43&52
5.	Nanded	Biloli	5	4.48	4.82	0.00	3.38	0.80	42&51
		Deglur	4	5.28	4.86	0.00	6.56	0.80	42&51
		Dharmabad	7	8.68	5.68	0.00	8.86	1.40	42&51
		Naigaon	4	4.86	3.38	0.00	4.28	0.40	42&51
6.	Parbhani	Gangakhed	4	6.28	2.28	6.38	8.80	0.80	42&51
		Parbhani	4	5.86	3.08	8.64	8.04	1.20	42&51
		Purna	2	6.48	4.32	6.42	8.52	1.40	42&51
Mean			4	4.67	3.45	1.43	6.27	0.77	
Zone-III									
1.	Hingoli	Basmat	3	4.48	4.12	4.58	8.38	1.20	42&51
2.	Nanded	Mudkhed	3	6.78	5.46	6.48	6.82	0.80	42&51
		Umri	4	8.12	4.68	6.02	8.42	1.60	42&51
Mean			3	6.46	4.75	5.69	7.87	1.20	

* Mean Pest population of two visits

Conclusion

Bokhardan tahasil of Jalana recorded minimum population and maximum population of sucking pest i.e. Thrips, aphids, whiteflies, mites and fruit borer were found in Dharmabad taluka of Nanded and overall presence insect pests on chilli was found to be moderate to high during the experimental period.

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