

Original Research Article

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**Effect of Abiotic Factors on the Population Dynamics of Chilli Thrips  
*Scirtothrips dorsalis* (HOOD) In Chilli, *Capsicum Annum* L.  
Crop in Allahabad, India**

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A study on the Seasonal incidence of chilli thrips, *Scirtothrips dorsalis* Hood in relation to abiotic factors was carried out at the Central field, Sam Higginbottom University of Agriculture Technology and Sciences, Allahabad, Uttar Pradesh, India during July 2016 to November 2016. Results revealed that the occurrence of chilli thrips, *Scirtothrips dorsalis* 2016 in the rainy season was commenced from 38th standard week (September last week) with an average population of 0.38 insect/plant. The chilli thrips, *Scirtothrips dorsalis* population increased and gradually reached the peak level of 6.38 insect/plant at 45th standard week (November second week). Thereafter, declined trend was observed due to fall of maximum and minimum temperatures as optimum weather conditions are decreasing.

**Introduction**

Chilli is one of the important vegetable and commercial spice crops (Mondal *et al.*, 2012). The losses cause due to insect pest complex is very enormous. Among various insect pests attacking Chilli crop, thrips *Scirtothrips dorsalis* is a major pest causing huge economic losses to Chilli growers (Reddy and Sreehari, 2009). Though there are many factors responsible for low yields, the major constraint is the regular occurrence of insect pests. The crop is ravaged by many insect pests right from nursery till harvest. The pest spectrum of Chilli crop is complex with more than 293 insects and mite species debilitating

the crop in the field as well as in storage (Butani, 1976). For effective pest management, the study on the influence of the various factors responsible for population fluctuation on a particular crop might assist in the prediction of its occurrence in a given area (Subharani and Singh, 2007). Thus the knowledge of the influence of weather parameters of Chilli will help to develop a forecasting system and to implement timely plant protection measures. Therefore, the present investigation was carried out and the results obtained are presented here.

## Materials and Methods

The experiment was conducted during Kharif season 2016 at the Central Field of Sam Higginbottom University of Agriculture, Technology and Sciences Allahabad, Uttar Pradesh, India, in a randomized block design with three plots, using variety Suryamukhi in a plot size of (5m x 3m) at a spacing of (45x30cm) with recommended package of practices except plant protection were followed for raising the crop. For population dynamics of the Chilli thrips, the population was recorded in weekly interval starting from the appearance of the pest. The observation of the pests was recorded from three tender leaves of five randomly selected plants from net plot area. Observations were initiated with the appearance of thrips and continued up to the last picking of the crop. The data thus obtained were converted into the average number of thrips per plant and are presented

in table 1. To determine the effect of various weather parameters on the fluctuation of *S. dorsalis* infesting Chilli, weather data were collected from meteorological laboratory situated on the farm and the relationship between the insect population and weather parameters was worked out.

## Results and Discussion

Data presented in table 1, revealed that the occurrence of Chilli thrips, *Scirtothrips dorsalis* in 2016 rainy season commenced from 38<sup>th</sup> standard week (September last week) with an average population of 0.38 thrips/plant. The Chilli thrips, *Scirtothrips dorsalis* population increased and gradually reached the peak level of 6.38 insect/plant at 45<sup>th</sup> standard week (November second week). Thereafter, declined trend was observed Meena *et al.*, (2013).

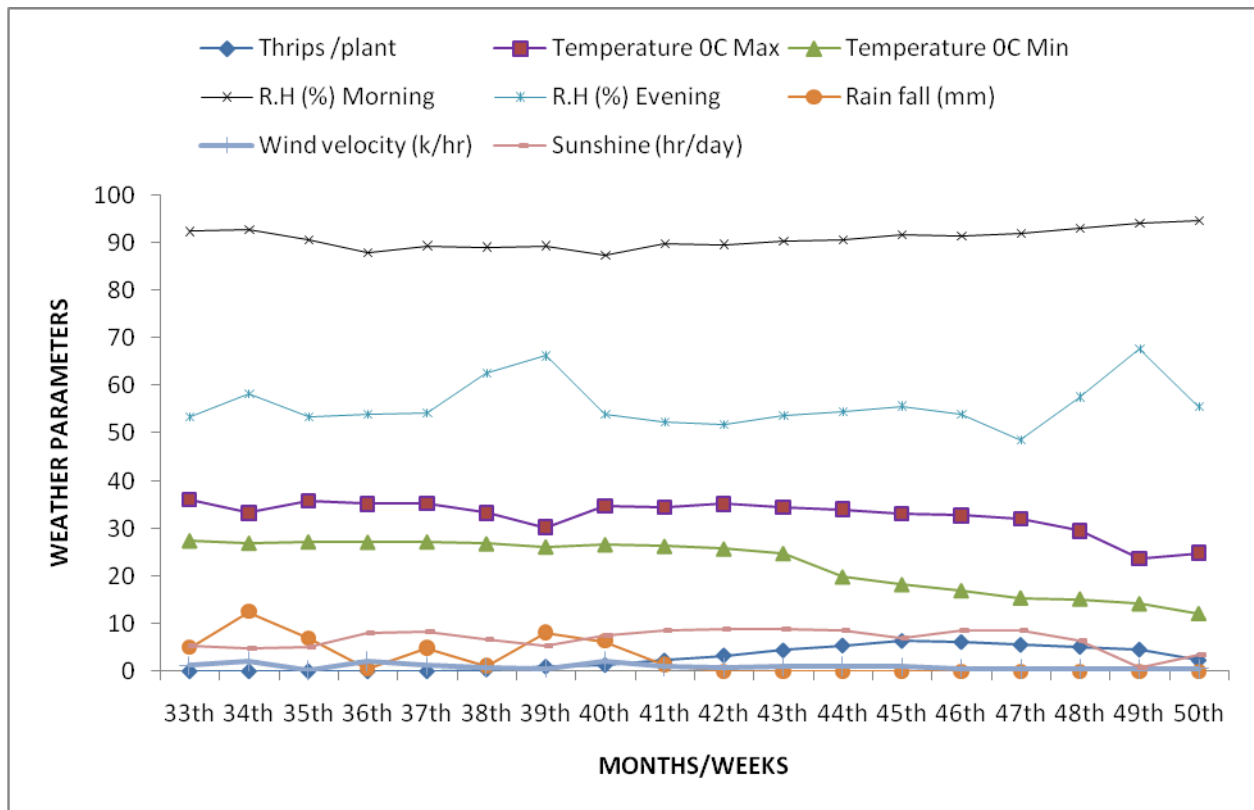
**Table.1** Population dynamics of chilli thrips (*Scirtothrips dorsalis*) during Kharif 2016

Standard weeks	Thrips /plant	Temperature °C		R.H (%)		Rain fall (mm)	Wind velocity (k/hr)	Sunshine (hr/day)
		Max	Min	Morning	Evening			
33 <sup>th</sup>	0	35.97	27.51	92.42	53.42	05.00	01.28	05.34
34 <sup>th</sup>	0	33.22	27.00	92.85	58.28	12.48	02.22	04.80
35 <sup>th</sup>	0	35.82	27.28	90.57	53.42	06.94	00.25	05.07
36 <sup>th</sup>	0	35.14	27.20	87.85	53.85	00.65	02.26	08.08
37 <sup>th</sup>	0	35.25	27.28	89.42	54.28	04.91	01.26	08.34
38 <sup>th</sup>	0.38	33.28	26.87	89.14	62.57	01.14	00.87	06.62
39 <sup>th</sup>	0.98	30.25	26.22	89.42	66.28	08.08	00.66	05.28
40 <sup>th</sup>	1.32	34.65	26.68	87.42	53.85	06.37	02.22	07.45
41 <sup>th</sup>	2.26	34.48	26.34	89.85	52.28	01.42	01.01	08.52
42 <sup>th</sup>	3.32	35.05	25.77	89.71	51.71	00.00	00.81	08.77
43 <sup>th</sup>	4.39	34.37	24.80	90.28	53.71	00.00	01.01	08.75
44 <sup>th</sup>	5.42	33.97	19.82	90.71	54.42	00.00	01.08	08.57
45 <sup>th</sup>	6.38	33.14	18.20	91.85	55.71	00.00	01.02	06.91
46 <sup>th</sup>	6.16	32.74	16.91	91.42	53.85	00.00	00.66	08.51
47 <sup>th</sup>	5.56	31.97	15.37	92.00	48.57	00.00	00.61	08.42
48 <sup>th</sup>	5.13	29.51	15.15	93.03	57.58	00.00	00.56	06.37
49 <sup>th</sup>	4.56	23.8	14.14	94.28	67.71	00.00	00.57	00.68
50 <sup>th</sup>	2.33	24.97	12.05	94.71	55.57	00.00	00.60	03.34

**Table.2** Correlation coefficient between thrips population and Weather parameters in *kharif* season 2016

S. No.	Weather parameters	r- value	t-value	F-test
1	Temp. Max ( <sup>0</sup> C)	1.858	1.935	NS
2	Temp.Min ( <sup>0</sup> C)	1.256	1.750	NS
3	Humidity Morning %	2.589	2.162	S
4	Humidity Evening %	1.178	1.727	NS
5	Rainfall (mm)	0.533	1.556	NS
6	Wind velocity	1.800	1.916	NS
7	Sunshine (hr /day)	3.720	2.454	S

**Fig.1** Graphical representation of seasonal incidence of chilli thrips, *Scirtothrips dorsalis* during *Kharif* 2016



Results revealed that the incidence of thrips (*Scirto thrips dorsalis* Hood), whiteflies (*Bemisia tabaci* Genn), aphids (*Aphis gossypii* Glover) and mites (*Polyphagotar sonemus latus* Banks) were appeared on the Chilli crop soon after transplanting, the peak population of thrips (14.5 and 14.7/ 3 leaves/

plant) was recorded in the first week of October. Vijayalakshmi *et al.*, (2014) Studied the results revealed that the infestation and severity of insect pests were highly influenced by weather parameters. Thrips population reached its peak (1.80/leaf) in the 52nd Standard Meteorological Week (SMW). And

the similar result was observed by Waiganjo *et al.*, (2008) (Table 2 and Fig. 1).

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