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Study the seasonal incidence of *T. tabaci* under field condition

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Abstract
A field experiment was carried out to evaluate the seasonal incidence of onion thrips at Vegetable Improvement Project, Research Farm Mahatma Phule Krishi Vidyapeeth, Rahuri, Maharashtra, during *Kharif* and *Rabi* season of the year 2013-14. Study on seasonal incidence of thrips (*Thrips tabaci*) *was* carried out on variety Basvant-780 during *kharif* and N-2-4-1 during rabi, 2013-14. In *kharif* season incidence of thrips was observed from 34th August MW (fourteen days after transplanting). The incidence of thrips ranged from 0 to 34.56 thrips per plant. The highest population was recorded in 44th MW (34.56 thrips/plant) (84 days after transplanting). The incidence of thrips was severe from 41th to 45th MW corresponding to mid week of October to first week of November. The population of coccinellids grub observed in *kharif* season ranged from 1.33-4.27 coccinellids/plant during 35th to 50th MW. The peak activity was noticed during 44th MW October with population 4.27/plant. The studies revealed that correlation of thrips population with maximum temperature (0.6117**) was significant and positive, whereas rainfall, minimum temperature, relative humidity (AM), relative humidity (PM) was non significant and negative. In *Rabi* season incidence of thrips was observed from 2nd January MW (fourteen days after transplanting). The incidence of thrips ranged from 5 to 32.15 thrips per plant. The highest population (32.15 thrips/plant) was recorded in 14th April MW (98 days after transplanting). The incidence of thrips was severe from 12th to 14th MW corresponding to last week of March to first week of April. The population of coccinellids grub observed in *rabi* season ranged from 1.10-3.37 coccinellids/plant during 3rd to 15th MW with its peak activity 14th MW.

Keywords: Seasonal incidence, *Kharif*, *Rabi*, *Thrips tabaci*, coccinellids, maximum temperature

Introduction

Material and Methods

The study on seasonal incidence of thrips (*Thrips tabaci*) was carried out on variety Basvant-780 during kharif and N-2-4-1 during rabi, 2013-14 at All India Coordinated Research Project on Vegetable Farm MPKV, Rahuri.

Methods of recording observations

The crop was transplanted during 7thAugust, 2013 for kharif season and 26th December, 2013 for rabi season. All the recommended agronomical practices were adopted for raising the crop. The crop area (100 m^2) was divided into five quadrates. Five plants were randomly selected from each quadrate for recording seasonal incidence of thrips on onion. Absolute population of nymphs and adults were recorded at weekly interval in the morning hours as per the method suggested by Mote (1981), starting from first week after transplanting of the crop and were continued up to harvesting of the crop. The whole experimental plot was kept free from spraying of any insecticides.

Correlation studies

In order to find out the specific impact of different weather parameters on T. tabaci in onion, the data on number of thrips per plant recorded in the experimental plot were correlated with the different meteorological parameters [temperature (maximum and minimum), relative humidity (morning and evening), rainfall and sunshine hours] recorded two standard meteorological weeks prior to observations of pest population from Department of Meteorology, Post Graduate Institute MPKV Rahuri. Correlation was worked out by standard statistical procedure (Steel and Torrie, 1980) [12] at Department of Agricultural Statistics, Post Graduate Institute, MPKV, Rahuri.

Results and Discussion

Seasonal incidence of onion thrips during *kharif* season 2013-14

The data on seasonal incidence of thrips and coccinellids are presented in Table 1 and graphically depicted.

The incidence of thrips was observed from 34th August MW (fourteen days after transplanting). The incidence of thrips ranged from 0 to 34.56 thrips per plant. The highest population was recorded in 44th MW (34.56 thrips/plant) (84 days after transplanting).The incidence of thrips was severe from 41th to 45th MW corresponding to mid week of October to first week of November.

The population of coccinellids grub observed in *kharif* season ranged from 1.33-4.27 coccinellids/plant during 35th to 50th MW. The peak activity was noticed during 44th MW October with population 4.27/plant.

Correlation studies between thrips population and weather parameters

The data pertaining to seasonal incidence of thrips and coccinellids and their correlation with weather parameters are presented in Table 2. The studies revealed that correlation of thrips population with maximum temperature (0.6117**) was significant and positive, whereas rainfall, minimum temperature, relative humidity (AM), relative humidity (PM) was non significant and negative. The studies revealed that correlation of coccinellid population with maximum temperature and sunshine (BSH) was significant and positive. Whereas, rainfall, minimum temperature, relative humidity (AM), relative humidity (PM) with thrips population was non significant.

Seasonal incidence of onion thrips during *rabi* season (2013-14)

The data on seasonal incidence of thrips and coccinellids are presented in Table 3 and graphically depicted.

The incidence of thrips was observed from 2nd January MW (fourteen days after transplanting). The incidence of thrips ranged from 5 to 32.15 thrips per plant. The highest population (32.15 thrips/plant) was recorded in 14th April MW (98 days after transplanting). The incidence of thrips was severe from 12th to 14th MW corresponding to last week of March to first week of April.

The population of coccinellids grub observed in *rabi* season ranged from 1.10-3.37 coccinellids/plant during 3rd to 15th MW with its peak activity 14th MW.

Correlation studies between thrips population and weather parameters

The data pertaining to seasonal incidence of thrips and coccinellids and their correlation with weather parameters are presented in Table 4.

The studies revealed that correlation of thrips population with maximum temperature (0.5187*) was significant and positive, whereas minimum temperature (0.6048*) was significant and negative and rainfall, relative humidity (AM), relative humidity (PM) with thrips population was non significant and negative. The studies revealed that correlation of coccinellids grub population with maximum temperature and sunshine (BSH), rainfall, minimum temperature, relative humidity (AM), relative humidity (PM) was non significant.

Table 1: Seasonal incidence of thrips during August to December 2013

Month	Met. Week	Thrips population /plant	Coccinellids population /plant	Temperature		Humidity		Sunshine Hrs.	Rainfall (mm)
				Max.	Min.	Morn (I)	Even (II)		
Aug-13	33	0	0	30.34	22.1	78.14	59	3.28	2.6
	34	5.2	0	29.2	21.82	78.7	63.8	4.25	0
	35	9.33	1.33	31.4	20.4	78.2	50	6.9	0
Sep-13	36	8.67	2.18	32.31	19.72	79.2	49.1	6.7	54
	37	6.45	2.13	31.4	22.02	81.71	62.7	5.8	46.6
	38	4.23	2.35	29.6	21.5	83.7	60.5	3.07	45.8
	39	13.93	2.23	30.5	21.1	80	56	4.3	0
Oct-13	40	20.73	1.98	31.9	21.2	81.8	58	6.3	0
	41	27.87	2.8	31.1	19.9	77.1	57.1	6.7	0
	42	29.63	3.25	32.02	20.12	66.28	46	8.47	0
	43	30.15	4.08	31.2	19.6	58.7	55.71	8.24	0
	44	34.56	4.27	31.38	16.85	63.28	47.71	9.32	0
Nov-13	45	29.41	3.35	30.62	14.61	65	35.57	7.98	0
	46	25.50	3.18	25.82	12.42	60.42	30.71	8.84	5.2
	47	8.10	1.98	30.97	13.57	67.85	36.57	8.3	41.8
	48	11.36	2.25	29.35	16.85	75.14	54	6.6	0
	49	14.48	1.83	28.94	13.50	72.28	38.14	7.41	0
	50	15.27	1.9	28.72	7.40	74.57	25.57	9.42	0

Table 2: Correlation between population of thrips and coccinellids with weather parameters in *kharif* season 2013

Weather parameters	Correlation coefficient value	
	Thrips	Coccinellids
Max. Temp.	0.6117**	0.4974*
Min. Temp.	-0.1348	-0.1903
Morning humidity %	-0.1377	-0.3980
Evening humidity (%)	-0.0383	-0.3850
Rainfall (mm)	-0.0866	-0.1101
Sunshine (BSH)	0.4183	0.6734**

Table 3: Seasonal incidence of thrips during Jan to April 2014

Month	Met. Week	Thrips population /plant	Coccinellids population /plant	Temperature		Humidity		Sunshine Hrs.	Rainfall (mm)
				Max.	Min.	Morn (I)	Even (II)		
Jan-14	1	0	0	28.7	12.3	65.9	37.3	8.3	0
	2	5	0	29.5	12.3	58.7	34	9.1	0
	3	5.93	1.10	29.7	13.5	53.9	34.1	7.9	0
	4	8.6	1.23	29.1	14.9	67.1	39.6	6.2	0
	5	13.53	1.56	28.5	11.2	59.2	30.9	9.3	0
Feb-14	6	14.37	1.73	31.8	11.2	53.7	20	10.1	0
	7	14.25	1.85	28	10.3	54.6	27	10.2	0
	8	22.66	2.35	31.1	15.1	56	30.1	9.4	0
	9	19.43	2.26	30.6	13.6	51.4	33.1	9.3	0.6
Mar14	10	10.30	1.22	29.4	16.5	77.4	45	6.7	32.8
	11	23.17	2.66	33.7	18.7	59.2	30.4	7.4	0
	12	29.93	2.93	36	16.9	41.1	20.4	8.5	0
	13	30.85	3.10	36.9	18.6	38.7	20.6	8.9	0
Apr-14	14	32.15	3.37	37.5	18.5	36.1	19.6	8.5	0
	15	25.67	2.08	37.2	18	46	16.7	9.4	0
	16	20.73	1.98	37.8	21.1	58.9	25.8	9.7	0
	17	17.68	1.45	38.7	21.5	46.4	20.2	9.2	0

Table 4: Correlation between population of thrips and coccinellids with weather parameters in *rabi* season 2014

Weather parameters	Correlation coefficient value	
	Thrips	Coccinellids
Max.Temp.	0.5187*	0.3407
Min. Temp.	-0.6048*	-0.4302
Morning humidity (%)	-0.2833	-0.2048
Evening humidity (%)	-0.2012	-0.0578
Rainfall (mm)	-0.3545	-0.1912
Sunshine (BSH)	0.2181	0.3137

Significant at 5% level=* Significant at 1% level=**

References

1. Chhatrola DP, Vyas HJ, Baraiya KP. The effects of irrigation, sowing date, and nitrogen on the incidence of garlic thrips (*T. tabaci*) on garlic. Indian J Ent. 2006; 68(2):121-124.
2. Chavan PL. Bio-efficacy of new generation insecticides against onion thrips, *Thrips tabaci* (Lindeman). M.Sc. (Ag.) Thesis submitted to MPKV, Rahuri (MS), 2014.
3. Duraimurugan P, Jagdish A. Population flactuation of *Scirtothrips dorsalis* Hood on rose in Karnataka. Insect Environ. 2004; 10(3):112-113.
4. Gill CK, Bhullar, Manmeet, Dhooria MS, Brar PS Incidence of *Thrips tabaci* (Lind.) and *Aceria tulipae* (Keifer) on garlic in Punjab. J Insect Sci. 2006; 19(1):88-90.
5. Goncalves PAS. Efficacy of synthetic and natural insecticides to control onion thrips. Horticultura Drasileria, 1997; 15(1):32-34. (Fide: R.A.E., 86(2):369).
6. Ibrahim ND, Adesiyun AA. Seasonal abundance of onion thrips, *Thrips tabaci* (Lind.) in Sokoto, Nigeria. J Agric. Sci. 2010; 2(1):107-114.
7. Kudale JP. Bioecology and management of key pests on desi cotton. M.Sc. (Ag.) Thesis submitted to VNMKV, Parbhani (MS), 2000.
8. Lorini I, Dezordi J. Population fluctuations of *Thrips tabaci* Lindman (Thysanoptera: Thripidae) in onion crop. Anais de Sociedade Entomologica do Brazil, 1990; 19(2): 361-365. (Fide: R.A.E., 80(8): 715).
9. Mote UN, Sonone HN. Relative susceptibility of different varieties of onion (*Allium cepa* L.) to thrips (*Thrips tabaci*). J Maharashtra Agric. Univ. 1976; 2(2):152-155.
10. Neergude M, Biradar AP, Veerendra AC, Ravulapenta S. Seasonal abundance of onion thrips, *Thrips tabaci* Lindeman and their natural enemies under dry land conditions. Int. J of Advances in Pharmacy, Biol. and Chem. 2014; 3:33-36.
11. Panickar BK, Patel JR. Population dynamics of different species of thrips on chilli, cotton and pigeonpea. Indian J. Ent. 2001; 63(2):170-175.
12. Steel RGD, Torrie JH. Principles and procedures of statistics. Publ. McGraw-Hill Book Company, New York, 1980.
13. Tong-Xian L. Seasonal population dynamics, life stage composition of *Thrips tabaci* (Thysanoptera: Thripidae), and predaceous natural enemies on onion in South Texas. Southwestern entomologist. 2004; 29(2):127-135.