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Management of Sucking Pest of Tomato

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A B S T R A C T

Field experiment was conducted at farmer's field A/P Alate, Tal- Hatkangale, Dist-Kolhapur to evaluate the effectiveness of different pest management modules against major pest viz. Whitefly (*Bemisia tabaci*) and Thrips (*Thrips tabaci*) of tomato during *Rabi*- 2016.The modules consisted of M-1 Erection of yellow sticky traps + foliar spray of imidacloprid + spray of cypermethrin + spray fenazaquin at the appearance of mites; M-2 Erection of yellow sticky traps+ spray of imidacloprid + spray of azadirachtin + spray fenazaquin at the appearance of mites; M-3 Erection of yellow sticky traps + spray of dimethoate + spray of indoxacarb + spray fenazaquinat the appearance of mites; M-4 Erection of yellow sticky traps + foliar spray of dimethoate+ spray of lambda-cyhalothrin + spray fenazaquin at the appearance of mites; M-5 Erection of yellow sticky traps+ foliar spray of imidacloprid + spray of chlorantraniliprole + spray fenazaquinat the appearance of mites and untreated check (M-6). The results revealed that minimum white flies attack on the module M1 (4.11whitefly/leaf) and next promising modules was M5 (4.18 whitefly/leaf) while in case of thrips minimum attack noticed in the module M1 (2.47 thrips/leaf) and next promising modules was M5 (2.60 thrips/leaf).

Introduction

Tomato (*Solanum lycopersicon* L.) is one of the most popular and widely grown solanaceous crop in many countries including India. The estimated area under tomato in India is about 80.85 lakh ha with a production of 19.69 lakh tonnes and productivity 24.4 MT/ha of fruits (Anonymous, 2016-17). The tomato agro-ecosystem is characterized by having few major key pests and some minor or secondary pests. Tomato growers in Maharashtra regularly experienced the economic damage caused tomato fruit borer (*Helicoverpa armigera* Hubner), leaf miner (*Liriomyza trifolii* Blanchard), thrips (*Thrips tabaci* L.), white flies (*Bemisia tabaci* Gennadius), cutworm (*Agrotis ipsilon* Root), leaf eating caterpillar (*Spodoptera litura* Fabr.), aphid (*Aphis gossypii* Glov.), mealy bug (*Ferrisia virgata* Kill) and mites (*Tetranychus sp.*). Among the insect pests; sucking pests *viz.* thrips, whitefly and aphid do cause severe damage to crop by transmitting virus diseases rather than direct feeding. Therefore, the sucking pests should be considered as economically important.

Materials and Methods

Field experiment was conducted at Alate, Tal-Hatkangale, Dist-Kolhapur, India situated at

616.27 m above mean sea level on $16^0 46'8.98''$ North to $74^0 23'38.16''$East latitude on tomato variety, JK-811 in Randomized Block Design (RBD) during *Rabi* season 2016 with three replications. The plot size was3.00 X 2.25 m^2 with 45 X 60 cm^2 spacing. Six management modules were taken including an untreated check with three replications. Details of modules were given in Table 1. The seedlings were transplanted on 2^{nd} December 2016.

Observations were recorded one day before spray and after 30, 40, 55, and 70 days after planting on all pests infesting tomato. Observations on pest count will be recorded on five randomly selected plants in each treatment plot on each selected plant, three leaves each from upper, middle and bottom portion were observed from lower side for presence of thrips and whiteflies.

Pre count will be taken one day prior to first spray. Collected data were then subjected to pooled analysis of variance (ANOVA) after appropriate transformations according to Panse and Sukhatme, (1967).

Results and Discussion

Data pertained in Table 2 and 3 on white fly and thrips infestation revealed that all the treatments were effective against the white fly and thrips, though varied in their efficacies for white fly (4.11-13.29) and for thrips (2.47-7.52) and were significantly superior to the check.

For white fly present observation showed that module M1 (4.11 whitefly/leaf) was found as the best module. The next promising modules was M5 (4.18 whitefly/leaf) and M3 (6.50 whitefly/leaf) and M2 (6.51 whitefly/leaf) were found equally effective in next order of efficacy. The module M1 and M5 recorded highest per cent reduction of whitefly over control i.e. 69.07% & 68.55%, respectively. Module M3 (51.09%) and M2 (51.02%) recorded similar result in per cent reduction of whitefly over control. Module M4 (46.20%) was relatively less effective in controlling the whitefly. The present study is substantially supported by the findings of Dhar and Bhattacharya (2015), Kar (2017) and Kumar *et al.*, (2017), Sarangdevot *et al*., (2006).

Table.1 Module details

Mo. No.	MODULE DETAILS
M_1	Erection of yellow sticky traps(1-2 traps @50-100 m^2) + foliar spray of imidacloprid 200 SL @ 0.5 ml/ lit at 20 & 30 DAT + spray of cypermethrin 25 EC @ 0.5 ml /lit at 15 days interval at the initiation of flowering + spray fenazaquin 10 EC @ 2ml /lit at the appearance of mites.
M_2	Erection of yellow sticky traps (1-2 traps @50-100 m^2) + foliar spray of imidacloprid 200 SL @ 0.5 ml/ lit at 20 &30 DAT + spray of azadirachtin @ 2.5ml/ lit at 15 days interval at the initiation of flowering + spray fenazaquin 10 EC @ 2ml /lit at the appearance of mites.
M_3	Erection of yellow sticky traps (1-2 traps @50-100 m^2) + foliar spray of dimethoate30 EC @ 2ml/ lit at 20 & 30 DAT + spray of indoxacarb 14.5 SC 1ml/ lit at 15 days interval at the initiation of flowering + spray fenazaquin10 EC @ 2ml / at the appearance of mites.
M_4	Erection of yellow sticky traps (1-2 traps @50-100 m^2) + foliar spray of dimethoate30 EC @ 2ml/ lit at 20 & 30 DAT + spray of lambda-cyhalothrin5 EC @ 0.8ml/ lit at 15 days interval at the initiation of flowering + spray fenazaquin 10 EC @ 2ml /lit at the appearance of mites.
M_5	Erection of yellow sticky traps(1-2 traps @50-100 m^2) + foliar spray of imidacloprid 200 SL @ 0.5 ml/ lit at 20 & 30 DAT + spray of chlorantraniliprole 18.5 SC @ 0.5 ml /lit at 15 days interval at the initiation of flowering + spray fenazaquin 10 EC @ 2ml /lit at the appearance of mites.
M_6	Untreated control.

Table.2 Effect of different modules on whitefly (*Bemisia tabaci*)

Module	Mean survival population of whitefly /leaf					Mean	% reduction over control
	Precount	30 DAT	40 DAT	55 DAT	70 DAT		
M_1	10.89 (3.37)*	7.32 (2.79)	5.22 (2.38)	2.66 (1.77)	1.25 (1.32)	**4.11 (2.07)**	**69.07**
M_2	10.82 (3.36)	7.38 (2.81)	5.15 (2.37)	6.20 (2.59)	7.31 (2.79)	6.51 (2.64)	51.02
M_3	10.58 (3.32)	9.49 (3.16)	8.07 (2.93)	5.30 (2.40)	3.15 (1.91)	6.50 (2.60)	51.09
M_4	10.68 (3.34)	9.39 (3.14)	7.96 (2.91)	6.10 (2.56)	5.13 (2.37)	7.15 (2.75)	46.20
M_5	10.87 (3.37)	7.21 (2.77)	5.02 (2.35)	2.95 (1.85)	1.54 (1.42)	**4.18 (2.10)**	**68.55**
M_6	10.27 (3.28)	11.83 (3.51)	12.52 (3.61)	13.18 (3.70)	15.61 (4.01)	13.29 (3.71)	
S. E. $\pm$	0.114	0.084	0.081	0.088	0.090		
C. D. at 5%	NS	0.252	0.246	0.266	0.272		
C. V.		5.52	5.91	7.11	7.85		

Table.3 Effect of different modules on thrips (*Thrips tabaci*)

Module	Mean survival population of thrips /leaf					Mean	% reduction over control
	Precount	30DAT	40 DAT	55 DAT	70 DAT		
M_1	4.53 (2.24)*	3.65 (2.03)	3.22 (1.93)	1.53 (1.42)	1.47 (1.40)	**2.47 (1.70)**	**67.15**
M_2	4.50 (2.23)	3.62 (2.03)	3.20 (1.92)	3.36 (1.96)	3.91 (2.10)	3.52 (2.00)	53.19
M_3	4.35 (2.20)	4.08 (2.13)	3.81 (2.07)	2.50 (1.72)	2.37 (1.69)	3.19 (1.90)	57.58
M_4	4.55 (2.24)	4.04 (2.13)	3.85 (2.08)	3.40 (1.70)	3.45 (1.98)	3.69 (1.97)	50.93
M_5	4.49 (2.23)	3.60 (2.02)	3.19 (1.92)	1.82 (1.51)	1.78 (1.55)	2.60 (1.75)	**65.43**
M_6	4.46 (2.21)	5.35 (2.42)	5.66 (2.47)	8.71 (3.03)	10.34 (3.29)	**7.52 (2.80)**	
S. E. $\pm$	0.084	0.070	0.077	0.090	0.099		
C. D. at 5%	NS	0.212	0.232	0.272	0.300		
C. V.		6.63	7.46	9.54	9.97		

DAT = Days after transplanting

***Figures in parentheses are transformed values $\sqrt{X + 0.5}$

For thrips present observation showed that the module module M1 (2.47 thrips/leaf) was found as the best treatment. The next promising modules were M5 (2.60 thrips/leaf). The module M3 (3.19 thrips/leaf) and M2 (3.52 thrips/leaf) were found equally effective in next order of efficacy. The module M1 and M5 recorded highest per cent reduction of thrips over control i.e. 67.15% & 65.43%, respectively followed by M3 (57.58%), M2 (53.19%) and M4 (50.93%). The present study is substantially supported by findings of Muhammad *et al*., (2004), Muhammad *et al*., (2008), Raghuvanshi (2014) and Khan *et al*., (2014).

References

Anonymous. 2016-17. Indian Horticulture Database.

Dhar, T. and Bhattacharya, S. 2015. Efficacy of imidacloprid and spinosad against pest complex of okra and tomato. *Int. J. Bio-res. Env. Agril. Sci.*, Vol. 1(3): 126-131

Kar, A. 2017. Bioefficacy evaluation of imidacloprid 17.8% SL and thiamethoxam against whitefly on tomato and their effect on natural enemies. *J. Ento. Zoology Stud.* 5(3): 1064-1067

Khan, S. B., Velo, S., Riffat, S., Abdul, R. A., Muhammad, N., Muhammad, N. S. 2014. Screening of biopesticides against Insect Pests of Tomato. *European Acad. Res.* Vol. II, Issue 5/August 2014

Muhammad, A., Muhammad, R., Syed, A. S. and Faheem, A. 2004. Comparative efficacy of different insecticides against sucking pests of cotton. *J. res. Sci.*, 15(1), 53-58

Muhammad, R. A., Muhammad, A, Safdar, A. A. and Muhammad, H. B. 2008. Comparative efficacy of insecticides against sucking insect pests of cotton. *Pak. J. Life Soc. Sci.*, 6(2): 140-142

Raghuvanshi, S., Bhadauria, N. S. and Pradyumn Singh, 2014. Efficacy of insecticides against major insect pests of soybean [*Glycine max* Merrill]. *Trends in Biosciences*, 7(3): 191-193.

Sarangdevot, S. S., Kumar, Ashok and Chundawat, G. S., 2006. Studies on bioefficacy of some newer insecticides against *Bemisia tabaci* and *Amrasca biguttula biguttula* on tomato in southern Rajasthan. *Pestology*, 30(5): 39-42.

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