



ORIGINAL ARTICLE

Release of Parasitoid, *Ceranisus menes* as Biological Control Agent of Chilli Thrips, *Scirtothrips dorsalis* in Experimental Net House

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ABSTRACT

Thrips pests which currently play a key role in protected cultivation (fruit vegetables/ ornamentals), causing serious damage on chilli, Capsicum annum plants. The present study was conducted to determine the efficacy and optimum release rate of the parasitoid Ceranisus menes (Hymenoptera: Eulophidae) at experimental nethouses. Results showed that there was comparatively lower insect pests infestation chilli yield.

Key words: *Ceranisus menes, Scirtothrips dorsalis, Biological Control*

Received: 18th Nov. 2015, Revised: 26th Nov. 2015, Accepted: 28th Nov. 2015

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How to cite this article:

Gupta M. and Kumar V. (2015): Release of Parasitoid, *Ceranisus menes* as Biological Control Agent of Chilli Thrips, *Scirtothrips dorsalis* in Experimental Net House. *Annals of Natural Sciences*, Vol. 1[1]: December, 2015: 1-2.

INTRODUCTION

Vegetables play a major role in the farming of agricultural crops. These crops are prone to heavy infestations during certain circumstances. Thrips (Thysanoptera: thripidae) plays an active role as pest of many ornamental, vegetable and agricultural crops. Among 8,800 species of thrips, around 5,000 species has been well described with their diverse life history and habitats (Grimaldi *et al.*, 2004). Thrips can reduce the yield and value of the crop directly by using them as food and oviposition site and indirectly by transmitting plant diseases. Their infestation can negatively impact on global trade due to the quarantine risks. (Morse *et al.*, 2006). Thrips feed on plant tissues by rasping and sucking sap, resulting in tissue scarification and depletion of the plant's resources. Scarification reduces the leaves photosynthetic capacity. Thrips shows strong viruliferous behavior in the form of chilli leaf curl virus (CLC), peanut necrosis virus (PBNV), tobacco streak virus (TSV). The direct injury and the virus disease result in discolouration of leaves, flowers and fruits. Chilli is the primary vegetable of routine food, rich with high antioxidants as well as vitamins. *Scirtothrips dorsalis* can cause serious damage at low density levels, visible distortion of leaves and necrosis of fruits. The natural enemies currently studied to control thrips pests are thrips parasitoid, *Ceranisus menes*. We investigated the percentage reduction due to thrips parasitoid in a chilli crop.

METHODOLOGY

Experiments for biological control of thrips were carried out in three microplots. Each microplot made up of nylon nets was in size of 3x10 mt and at research laboratory of D.S. College, Aligarh. Plantings of chilli cultivated under net house microplots. Crop maintenance (kept free from weeds and grasses) has been done at regular time intervals. Pests and diseases were controlled biologically.

OBSERVATION

Table 1: Effect of Parasitoid; *Ceranisus menes* on the population of *Scirtothrips dorsalis* in Chilli field of Fifth Net House during the year 2014-15

S.No.	First release				Second release (after one week)				Third release (after one week)			
	Initial no. of S.d*/plant	No. of c.m. release**	No. of alive S.d. after 3 days	% reduction	No. of remaining S.d.*/ Plant	No. of c.m. release**	No. of alive S.d. after 3 days	% reduction	No. of remaining S.d.*/ plant	No. of c.m. release**	Avg. No. of alive S.d. after 3 days	% reduction
1.	45	20	39.61	11.9	70.4	20	33.7	52.1	36.5	20	11.5	68.4
2.	45	25	35.54	21.02	63.5	25	28.34	55.3	33.50	25	8.37	75.01
3.	45	30	32.43	27.93	57.6	30	20.26	64.8	30.6	30	6.50	78.75

*mean value, ** all the no. pf parasitoids were release in each micro-plot, S.d. = *Scirtothrips dorsalis*, c.m.= *Ceranisus menes*

RESULT AND DISCUSSION

The possibility of use of parasitoid, *Ceranisus menes* for control the natural infestation of *Scirtothrips dorsalis* on chilli plants under net house conditions was tested. After three days of release parasitoid the percentage reduction was calculated 11.06, 15.81 and 23.60. After one week of first release the percentage reduction was concluded 35.07, 45.37 and 56.58. After one week of second release the percentage reduction was calculated 48.46, 61.60 and 71.96 during first, second and third experiment respectively. Results of parasitoid release in experimental net house indicate that the no. of alive thrips was observed very low from its economic threshold level. Therefore, the damage threshold of thrips is very high, which gives more opportunity for biological measures to control thrips pests.

ACKNOWLEDGEMENT

Authors thanked for The Principal and The Head, Deptt. of Zoology, D.S. College, Aligarh for assist about this experimental research and providing the all research facilities.

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