Environment & Ecology 27 (2A) : 838—840, 2009
 ISSN 0970-0420

Efficacy of Some Insecticides in the Management of Chilli Thrips *(Scriptothrips dorsalis)*

A. DHAL, L. TRIPATHY, N. PANDA AND S. K. DASH[1]

Krishi Vigyan Kendra, OUAT, Tirtol, Jagatsinghpur 754160, India
[1]All India Coordinated Vegetable Improvement Project, OUAT, Bhubaneswar 751003, India

Abstract

A field trial was made to evaluate the efficacy of some insecticides in the management of chilli thrips *(Scriptothrips dorsalis)* in the farmer's field east and southeast coastal plain zone of Orissa. Seven insecticides with one untreated control were taken in randomized block design in which square meter observation and pest population count were made. Size of the fruit viz. length and breadth along with green chilli yield (q/ha) were recorded. The insecticides under the test proved their effectiveness when compared to the control plot. Thiomethazone was found to be the best in managing the thrips followed by imidacloprid and dimethoate. However, the spraying with chloropyriphos and carbaryl was found to be ineffective in reducing the thrip population. However, neem oil spray proved its effectiveness in reducing infestation and increasing the yield, which may be tried in future.

Key words : Insecticides, Chilli thrips, Management.

Chilli (*Capsicum annum* L.) has been considered as one of the important vegetable crops in the state of Orissa. Chilli has been considered as a source of vitamin C (1) and is relished for its color and pungency. It is used both as green chilli and in dry forms. However, there are several biotic and abiotic factors that limit its production. Of the important factors, the infestation of thrips *(Scriptothrips dorsalis)*is important. Chilli thrip is considered as a polyphagus insect (2) causing severe upward leaf curl in chilli. The farmers use different expensive and systemic insecticides haphazardly thereby arising resistance and resurgence of the pest. Since there is paucity of information on the effectiveness in the use of modern insecticides a field trial was conducted to evaluate the efficacy of certain new insecticides along with traditional insecticides as foliar spray against chilli thrips.

Methods

Afield experiment was conducted during 2006-07 and 2007-08 in the farmer's field at Teramanapur of Kujanga block of Jagatsinghpur district under east and southeast coastal plain zone of Orissa. Eight treatments (seven insecticides and one control) were selected to study their effectiveness. Three farmers fields of the same area with similar soil type were selected which was treated as three replications for the experiment. The soil type of the experimental plots was sandy loam in texture having organic carbon 0.45 (%) and soil pH 7.8. The soil was medium in available nitrogen, P_2O_5 and K_2O (kg/ha).

The experiment was laid out in randomized block design where the plot size was 20 m^2 for each treatment comprising (20 × 8) 160 m^2 for each treatment. Other cultural and agronomical practices were taken following standard recommendation. The chilli variety Utkal Ragani was used for the purpose. The field of that area was found to be sick of the regular incidence of thrips which reduced the yield. During the early growth period and before the incidence of any disease or pest, five spots were randomly earmarked by sticks for squaremeter observation. The plants during the period of infestation were counted to assess the percentage of infestation and the severity of pest attack. Two sprays of the insecticides were made at 10-day intervals and the population count of the nymphs and the adults were recorded by taking five numbers of terminal leaves of plant. For the purpose two plants were tagged in the square meter area, thereby taking 10 plants from one treatment plot in which altogether 50 leaves were counted. The population count per plant was recorded which shows

the thrips count in five terminal leaves. Besides, the average of fruit length and breadth were recorded by taking observations of fresh chilli with random selection of 10 fruits in each marked square meter area thereby taking 50 fruits for one treatment plots. As the farmers of the area usually do not go for dry chilli purpose, the yield was recorded only for green chilli and the data were statistically analyzed as per SPSS software packages.

Results and Discussion

To study the efficacy of the insecticides against thrips in chilli, some observations were recorded on pest infestation, yield, and yield attributing characters. The highest infestation was recorded as 72% in the untreated control compared to the least with thiomethaxone spray (7.4%) (Table 1). The percentage plants infested revealed the variation in the severity of attack. The population count of the thrips (both nymph and adult) showed significant variation among the treatments (Fig. 1). The population count was 22 which was maximum in control plot and was significantly higher than other treatments. Thiomethaxone was found to be best in managing the thrips by making the count only by 2 per plant which was followed by all at par with spraying imidacloprid where the count was 5 per plant. The effect of spraying with dimethoate, phosalone and neem oil was found to be at par and they reduced the pest attack significantly higher than carbaryl and chloropyriphos. Spraying with carbaryl and chloropyriphos was found to be effective in reducing thrip severity with a population count of 13 and 15,

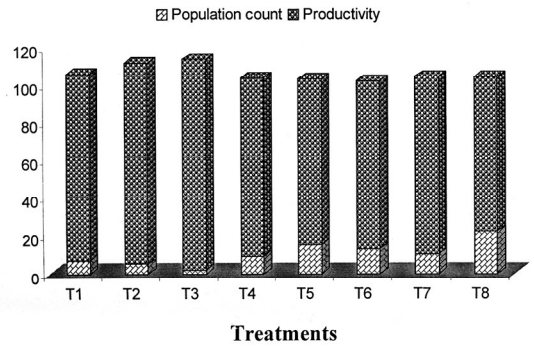

Figure 1. Comparative efficacy of different insecticides in relation to population count (nymphs/adults) per leaf and productivity (q/ha) of chilli.

respectively. Significant difference was also found in the size of the fruits (both length and breadth) The control plot showed significant reduction in fruit size (4.5 cm length and 2.8 cm breadth)compared to the highest measurement of 5.9 cm length and 3.1 cm breadth in spraying of thiomethaxone.

With respect to yield, all the treated plots recorded yield ranging from 18.84 to 22.28 kg which was significantly higher than the control (16.4 kg). The productivity recorded the highest in spraying thiomethaxone (11.4 q/ha) followed by imidacloprid (106.5 q/ha), dimethoate (98.6 q/ha), phosalone (94.4 q/ha), neem oil (94.2 q/ha), carbaryl (87.8 q/ha) and 87.6 (q/ha in chloropyriphos spray. As high as 35.8% increase in yield was obtained in spraying the thiomethaxone 25WG 0.025%. This proved to be the suitable chemical in managing the thrips. The per-

Table 1. Efficacy of certain insecticides as foliar spray against thrips in chilli var Utkal Ragini.

Treatments	Plants infested (after 2 sprays) (%)	Population count nymphs/ adults per leaf	Fruit size (cm) Length	Girth	Yield of green chilli Plot (20 m^2) yield (kg)	Productivity (q/ha)	Increase in yield (%)
T_1 Dimethoate 30 EC 0.06%	15.4	07	5.5	3.0	19.72	98.6	20.2
T_2 Imidacloprid 20SP 0.025%	11.5	05	5.75	3.1	21.30	106.5	29.8
T_3 Thiomethaxone 25WG 0.025%	07.4	02	5.9	3.1	22.28	111.4	35.8
T_4 Phosalone 50 EC 0.07%	28.2	09	5.45	2.9	18.88	94.4	15.12
T_5 Chloropyriphos 20EC 0.2%	55.4	15	4.9	2.9	17.52	87.6	6.83
T_6 Carbaryl 50 SP 0.015%	52.6	13	4.9	2.8	17.76	88.8	8.29
T_7 Neem oil 0.4%	30.5	10	5.1	2.9	18.84	94.2	14.87
T_8 Control–No chemical spray	72	22	4.5	2.8	16.4	82.0	-
CD (P = 0.05)	7.73	5.5	0.3	0.2	1.1	-	-

formance of insecticides like chloropyriphos and carbaryl were found to be inconsistent. Similar observation was also reported by Reddy et al. (3) where fipronil and thiomethaxone, were found to be more effective against thrips and phosalone, chloropyriphos and carbaryl were found to be the least effective. The effectiveness of neem oil (azadiractin) was also evaluated with other insecticides (4). Their results also revealed that chlorfenapyr, spinosad and imidacloprid were more effective than other insecticides, as found with the effectiveness of imidacloprid in the present experiment.

References

1. Anonymous. 1995. Hand book of horticulture. ICAR, New Delhi, India.
2. Zimmerman G. 1986. Entomopathogenic study of *Scriptothrips dorsalis.* J. Appl. Ent. 102 : 213—215.
3. Reddy A. V., G. Sreehari and A. K. Kumar. 2005. Evaluation of certain insecticides against chilli thrips *Scriptothrips dorsalis* and mites *Polyphagotarsonemus latus.* Res. on Crops 6 : 625—626.
4. Seal D. R., M. Ciomperlik, M. L. Richardsa and W. Klassen. 2006. Comparative effectiveness of chemical insecticides against the chilli thrips, *Scriptothrips dorsalis* Hood (Thysanoptera : Thripidae) on pepper and their compatibility with natural enemies Crop Prot. 25 : 949—955.