

## Efficacy of promising insecticides (Synthetic and Botanical) against red legged spider mite, *Tetranychus ludeni* Zacher on brinjal (*Solanum melongena*) crop

Manoj Kumar Tripathi<sup>1</sup> and D.K. Srivastava<sup>2</sup>

1. Deptt. of Entomology, T.D.P.G. College, Jaunpur-222002

2. Council of Science & Technology, Lucknow-260019, India

Received November 18, 2018 and Accepted January 20, 2019

**ABSTRACT :** An experiment was carried out to investigate the efficacy of some insecticides to red legged spider mite, *Tetranychus ludeni* Zacher under field condition on brinjal/eggplant (*Solanum melongena*). In all the treatments Dicofol 18.5 EC showed highest mortality (61.49%) after treatment (0.05%), while omite 57 EC and Sulphur 80WP were showed relatively less mortality (58.20%) and (42.97%). The other treatments were also found effective and their mortality rate against mite were ethion 50 EC (42.80%), NSKE (40.89%), Azadirachtin (39.72%), neem oil (36.63%), and micomite (27%) over control (22.81%).

**Key Words :** Red legged spider mite (*Tetranychus ludeni* Zacher), brinjal/eggplant (*Solanum melongena*), insecticides, synthetic and botanical.

Phytophagous mites constitute a serious menace to vegetable crops. During summer days, usually dust deposit on the foliage, which are in close proximity to *kacha* road, and dust from brick kiln provides medium for attachment of mite webs on the smooth leaf surface (Singh, 1994). The mite species that cause damage to most vegetable crops are *Tetranychus urticae* Koch, *Tetranychus macfarlanei* Baker and Pritchard, *Tetranychus ludeni* Zacher, *Tetranychus neocaledonicus* Andre and *Euteranychus orientalis* Klein. These mite causes damage on vegetable crops considerably. The red legged spider mite, *Tetranychus ludeni* Zacher attack a wide range of crops including fruit trees, pulses, oilseeds, millets, fibre crops, ornamental crops and obviously vegetable crops. This mite is active throughout the year. Highly susceptible crops reported so far brinjal, beans, tomato, okra, soybean and cucurbits (Bindra and Singh, 1970).

With the introduction of new cropping pattern in recent years *Tetranychus ludeni* Zacher has been identified to be most harmful to brinjal and beans crops in different parts of the country. Brinjal was found to be worst suffered by the attack of this mite in Jaunpur region in Uttar Pradesh. Therefore, an experiment was conducted to “Study the effect of promising pesticides (Synthetic and Botanical) on harmful red legged spider mite, *Tetranychus ludeni* Zacher on brinjal crop”.

### Material and Methods

Field trials were conducted in Pili kothi farm, TDPG College, Jaunpur during (March to June) 2014, to evaluate the efficacy of various acaricides/botanical

pesticides against phytophagous mite, *Tetranychus ludeni* Zacher, infesting brinjal, replicated thrice with an individual plot size of 4 m x 3 m. The spacing between row to row 50 cm and plant to plant 15 cm was maintained on brinjal in Randomized Block Design (RBD) with 9 treatments for management of mite with dicofol 18.5 EC, omite 57EC, ethion 50EC, sulphur 80WP, NSKE 5%, azadirachtin 0.03%, neem oil and mycomite

The insecticides were sprayed when the mite population was at its peak and crop was about 2 month old having maximum fruits. Observations were taken in field condition, ten leaves each plot was selected randomly and collected leaves brought separate polythene bag separate plot to laboratory. The mite population was counted on the basis of 2.5 cm<sup>2</sup> area of tree place of per leaves with the help of stereoscopic binocular microscope on pretreatment, after 1, 3, 7, and 14<sup>th</sup> days of spraying in the treatment. In control plot, the plain water was sprayed. Precautions were taken during spraying to cover spray fluid uniformly and insecticide drift was prevented to the extent possible. The population reduction in different time intervals after treatments was calculated over control. The data of mortality of mite population in field experiments were calculated in to per cent mortality by using following formula:-

Percentage of mortality

$$= \frac{\text{Average reduction in population}}{\text{Average pretreatment population}}$$

The per cent mortality taken on mite population at various days and hours were transformation of Arc Sine

$$\sqrt{\text{Parentage}}$$

**Table-1 :** Efficacy of synthetic, botanical and fungal origin pesticides against *Tetranychus ludeni* on brinjal at Jaunpur in 2014.

Treatments	Conc. (%)	*Mean per cent reduction in mite population after days of treatment				Mean
		1	3	7	14	
Dicofol (18.5 % EC)	0.05	66.77* (54.80)**	88.91 (70.55)	59.97 (50.75)	30.31 (33.40)	61.49 (51.64)
Omite (57 % EC)	0.10	61.86 (51.86)	85.70 (67.78)	57.39 (49.25)	27.83 (31.84)	58.20 (49.72)
Ethion (50 % EC)	0.05	45.10 (42.19)	71.03 (57.44)	32.36 (34.67)	22.69 (28.45)	42.80 (40.86)
Sulphur (80 % WP)	0.1	42.81 (40.87)	64.98 (53.72)	47.75 (43.71)	16.35 (23.85)	42.97 (40.96)
NSKE (5 %)	5	36.18 (36.98)	65.16 (53.82)	36.33 (37.07)	25.96 (30.63)	40.89 (39.75)
Azadirachtin (0.03 % EC)	2	41.29 (39.98)	69.41 (56.42)	34.20 (35.79)	13.96 (21.94)	39.72 (39.07)
Neem oil	2	44.74 (41.98)	51.53 (45.88)	36.52 (37.18)	13.74 (21.76)	36.63 (37.25)
Mycomite	3 g/l	24.79 (29.86)	51.06 (45.61)	22.37 (28.23)	9.79 (18.23)	27.00 (31.31)
Control (Water spray)		25.63 (30.42)	28.34 (32.16)	21.85 (27.87)	15.41 (23.11)	22.81 (28.53)
SEM ±		5.30	7.80	6.34	4.31	5.93
CD (0.05%)		14.19	20.90	16.99	11.54	15.90

\* Mean of three replication; each replication consist of 10 leaves drawn randomly from three places

\*\* Figures in parenthesis are Arc Sin  $\sqrt{\text{Parentage}}$  transformation

## Results and Discussion

During the present investigation, overall efficacy among the different insecticides sprayed in field condition during March to June, 2014 indicated that Dicofol 0.05% was the best treatment achieving significantly highest reduction in mite population (61.49%) over control (22.81%) (Table 1). The next best treatments were found to be omite 0.10% (58.20%), sulphur 0.1% (42.97%), ethion 0.05% (42.80%). The least effective treatments were NSKE 5% (40.89%), Azadirachtin 5% (39.72%), neem oil (36.63%) and micomite (27%). NSKE and Azadirachtin were at par with each other. The efficacy of above insecticides was reported by Nagina and ChannaBasavanna (1983) in a field experi-

ment on okra against *Tetranychus ludeni* Zacher, sprayed 0.05 – 0.15 per cent sulphur and 0.003 – 0.01 per cent dicofol and found that dicofol has given good response at 0.01 per cent concentration. Singh *et al.* (1989) used different pesticides and reported dicofol, dinocap, kelthane and sulphur were found to be highly effective. In general the performance of dicofol was found superior, most effective and cheap acaricide. (Singh and Singh, 1992) used twelve different insecticides / acaricides for control of *Tetranychus cinnabarinus* (Boisd.) on lady's finger (okra) and found that Dicofol 0.05% and sulphur (0.25%) showed better control on this mite. Similar findings are also reported by Biradar and Nadaf (2014).

## References

- Bindra, O.S. and Singh, G., 1970. Mite pests of ornamental plants in India. *Pesticides*, 17-24.
- Biradar, A.P. and Nadaf, A.M., 2014. Bio efficacy of Bifenazate 240 SC (Floramite) against mites on Grape, *Vitis vinifera*. *Annl. Plant. Prot. Sc.*, **22**(2) : 317-319.
- Nagina, Neelu and ChannaBasavanna, G.P., 1983. Effect of sulphur and dicofol on *Tetranychus ludeni* and its predator, *Amblyseius tetranychivorus*. In *proceeding of International Congress of Plant Protection*, **3** : 1028.
- Singh, R.N., 1994. Mites menace on vegetable crops in India. *Shashpa*, **1**(2) : 59-74.
- Singh, R.N. and Singh, J., 1992. Evaluation of some pesticides against carmine mite, *Tetranychus cinnabarinus* (Boisd.) on Lady's Finger. *Pestology*, **17**(2): 20-23.
- Singh, R.N.; Mukherjee, I.N.; Singh, R.K. and Singh, J., 1989. Evaluation of some pesticides against Red spider mite, *Tetranychus ludeni* Zacher on cowpea. *The first Asia Pacific Conference of Entomology* : 566-569.