



RECORD OF A NEW MITE PEST ON VASAK(JUSTICIA ADHATODA) IN WEST BENGAL AND ITS MANAGEMENT WITH BIOPESTISIDES.

Zoology

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ABSTRACT

The present paper reports for the first time a mite pest, *Brevipalpus californicus* on vasak (*Justicia adhatoda*) in West Bengal. The result of the laboratory study on bioefficacies of 3 plant extracts are presented here which indicates that Ramtuli leaf extract (*Ocimum gratissimum*) was best as compared to Pipul (*Piper longum*) and Nishinda (*Vitex negundo*) at 2% and 3% concentrations, respectively.

KEYWORDS

New mite pest, *Justicia adhatoda*, West Bengal, Biopesticides, Management

INTRODUCTION :

The mite, *Brevipalpus californicus* (Family-Tenuipalpidae) was found to infest Vasak plant (*Justicia adhatoda*) very seriously causing browning of the leaf margins and later withering of such leaves. In a single leaf as many as 200-300 mites of all stages could be seen. The damage was so serious that the plants looked sickly. Since no record of this pest on vasak, an important medicinal plant, has so far been reported and as because no trial has been conducted earlier for control of this pest with biopesticides, the present bioefficacy study under laboratory condition was undertaken and the present paper reports the results thereof. It may be mentioned that no chemical pesticide is recommended for application on medicinal plant for pest management because these plants are used in preparation of herbal drugs and to avoid residue and other related problems. Hence, biopesticide is the only dependable alternative for pest management on medicinal plants.

MATERIAL AND METHODS:

The mite *Brevipalpus californicus*, on which the present study was conducted, was found seriously infesting an important medicinal plant, Vasak (*Justicia adhatoda*) in the Medicinal Plants Garden of Ramakrishna Mission Ashrama, Narendrapur during January- May 2017. The experiment was conducted in the laboratory of, Medicinal plants Research & Extension Centre, Narendrapur during February-April 2017. The technique which was followed regarding preparation of plant extracts was that of (Gupta et al. 2007). The methodology used for application of biopesticides was the topical application method (Helle & Sabelis, 1985) and the mortality percentage was calculated according to (McDonald et al. 1970). The statistical analysis of mortality data was done following ANOVA and DMRT using the package of SPSS.

RESULTS AND DISCUSSION:

The data pertaining to percentage mortality achieved in case of different plant extracts against *Brevipalpus californicus* infesting vasak under laboratory condition at different intervals are given in Table 1.

24 hours

At 2% concentration, the highest mortality was achieved in case of Ramtuli which was 53.33% and was significantly superior to Nishinda 2% where the mortality was 40.29% and Pipul 2% where the percentage mortality was 13.33. It appeared that Nishinda 2% was although inferior to Ramtuli 2% but was significantly superior to Pipul 2%. At the same interval and at 3% concentration Ramtuli registered the highest mortality of 60.00% which was superior to the other treatments. No mortality was recorded in control.

48 hours

At 48 hours interval and at 2% concentration, Ramtuli registered the highest mortality which was 58.23% and was better than Nishinda 2% and Pipul 2% registering mortality of 44.29% and 33.33%, respectively. At 3% concentration, Ramtuli continued to be superior

to all the treatments registering mortality of 83.23% but was statistically at par with Nishinda 3% where it was 73.15% but Pipul 3% was inferior to the other two treatments where the mortality was 66%. No mortality was recorded in control.

72 hours

At 2% concentration, Ramtuli continued registering highest mortality (73.33%) which was superior to Pipul 2% and Nishinda 2%. The latter was inferior to Pipul 2%. At 3% concentration, the same trend was seen where the percentage mortality was Ramtuli 3% (86.66%) = Nishinda 3% (78.19%) = Pipul 3% (82.33%). No mortality was recorded in control.

96 hours

At this interval, Ramtuli registered the highest mortality of 85.23% which was significantly superior to both Pipul 2% (73.67%) and Nishinda 2% (58.25%), the latter was statistically inferior to the former. At 3% concentration, Ramtuli registered the highest mortality of 90.66% which was at par with both Pipul 3% (84.33%) and Nishinda 3% (83.25%). No mortality was recorded in control.

TABLE-1: Bioefficacy of leaf extracts against *Brevipalpus californicus* under laboratory condition at different intervals after application.

Leaf extract	Concentration	Initial population	Percentage mortality at different interval after spraying			
			24 hours	48 hours	72 hours	96 hours
Pipul (<i>Piper longum</i>)	2%	15	13.33	33.33	66.00	73.67
Pipul	3%	15	33.33	66.00	82.33	84.33
Ramtuli (<i>Ocimum gratissimum</i>)	2%	15	53.33	58.23	73.33	85.23
Ramtuli	3%	15	60.00	83.23	86.66	90.66
Nishinda (<i>Vitex negundo</i>)	2%	15	40.29	44.29	48.23	58.25
Nishinda	3%	15	56.71	73.15	78.19	83.25
Control (unsprayed)		15	0	0	0	0
CD value at 5%			17.91	16.09	13.65	10.99

CONCLUSION: From the aforesaid data the conclusion which can be arrived at is as below:

- All the 3 plant extracts at both the concentrations proved having acaricidal property by causing mortality of *Brevipalpus*

californicus.

- In all the treatments, the percentage mortality improved with time interval.
- Ramtuli at both the concentrations proved to be superior to the other two treatments, viz. Nishinda and Pipul at both concentrations.
- Among Nishinda and Pipul, the latter was superior to the former.
- This preliminary trial indicates the promise of plant extracts for control of mite pests on medicinal plant but needs more trials especially under field condition before suggesting its use to the farmers.

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