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Interaction between the Predatory Mite, *Amblyseius ovalis* (Evans) and Chilli Mite, *Polyphagotarsonemus latus* (BANKS)

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ABSTRACT

In laboratory tests, *Amblyseius ovalis* (Evans) at 1:25, 1:50 and 1:100 predator-prey ratios eliminated *Polyphagotarsonemus latus* (Banks) on 9th, 12th and 17th day respectively, but could not check the multiplication of prey at 1:150 ratio.

KEY WORDS : *Amblyseius ovalis, Polyphagotarsonemus latus,* interaction

In the last three decades, short-sighted, unilateral and exclusive employment of synthetic pesticides in pest management has resulted in the pollution of the environment, while the pest problems have also increased. If the use of the broad spectrum insecticides is continued, the natural enemies may become almost extinct, and thus affect the natural balance. There is a need for exploration and greater use of non- chemical methods such as biological control in pest management. Hence, this experiment was undertaken to study the utilization of *Amblyseius ovalis* (Evans) for the control of chilli mite, *Polyphagotarsonemus latus* (Banks).

MATERIALS AND METHODS

A laboratory experiment was carried out in four predator-prey ratios using chilli leaves ventral side up on wet cotton swab maintained in Petri dishes (10 cms dia). In the experiment with 1:25 and 1:50 predator-prey ratios, there were 6 replications and in 1:100 and 1:150 only 3 replications were maintained since the counting and handling of mites in the latter case was difficult.

The required number of newly mated prey mites were left on each of the single chilli leaves or overlapped leaves and single gravid predator was released in each of the treatments. The population counts of both predator and prey were taken daily. The old chilli leaves were carefully removed along with mites and kept on fresh leaves. The mites from the older leaves gradually migrated to the new leaves in the Petri-dishes as the former progressively dried.

RESULTS AND DISCUSSION

In the laboratory study on the interaction, a definite trend was observed in all the 4 predator-prey ratios. When the population of the prey was declining, reduction in the number of immature stages was more pronounced while there was a slight increase in the number of adults. The decline in the adult population of prey to certain point in all the 4 ratios was more pronounced in the absence of larvae and nymphs.

In case of the predator at 1:25 ratio, a peak in

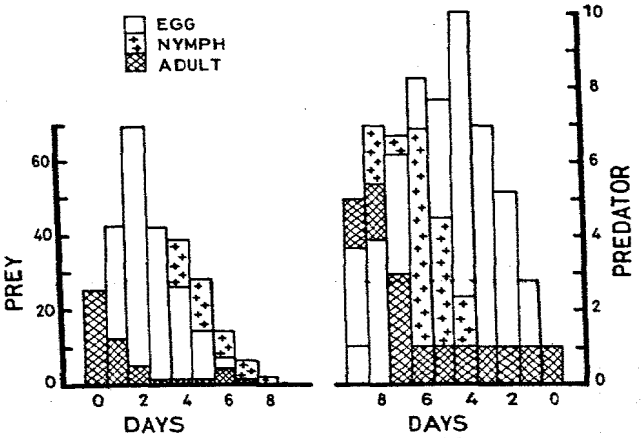

Fig. 1 Interaction between *A. ovalis* and *P. latus* at 1:25 ratio

their numbers was reached 2 days after the prey had reached the peak (Fig.1). When the population of the predator was declining, the number of eggs and nymphs also declined, which might be due to cannibalism or reduction in the number of eggs laid by the females as the amount of food available was reducing. On 9th day, all prey mites were eliminated but there were 4.93 adults, 3.62 nymphs and 1.38 eggs in the predator

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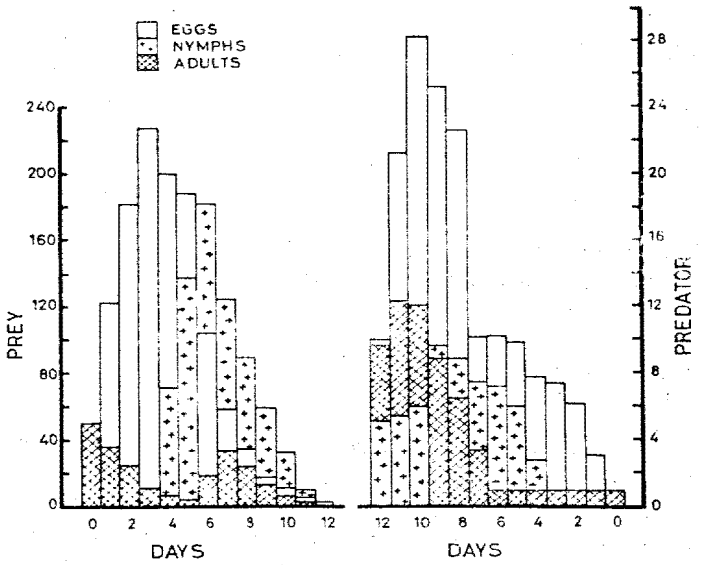

Fig. 2 Interaction between *A. ovalis* and *P. latus* at 1: 50 ratio

population. The experiment was extended upto 12th day in the predator-prey ratio at 1:50, wherein maximum population in he prey and predator was observed on 5th and 10th day, respectively (Fig.2).

In case of 1:100 ratio, peak prey and predator density was seen on 8th and 15th days

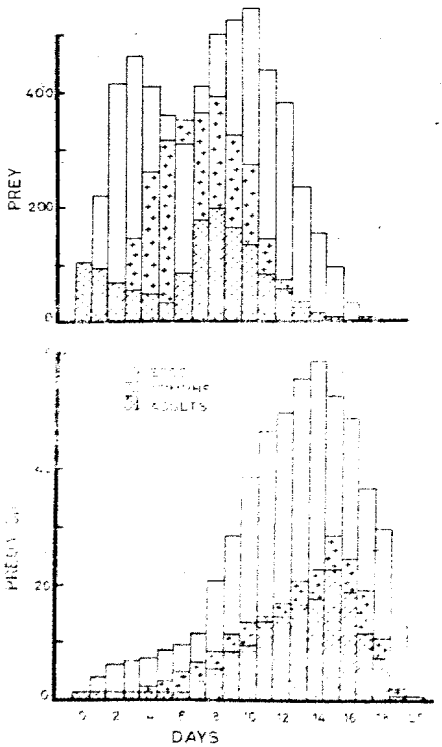

Fig. 3 Interaction between *A. ovalis* and *P. latus* at 1: 100 ratio

respectively. Though there was increasee in the egg number, the nymphal density started declining on 9th day in prey population due to increase of predator nymphs till the 15th day. In this ratio there was a corresponding decreasé in the adults and nymphs of prey in relation to the increase in the adults and nymphs of predator after 9th day

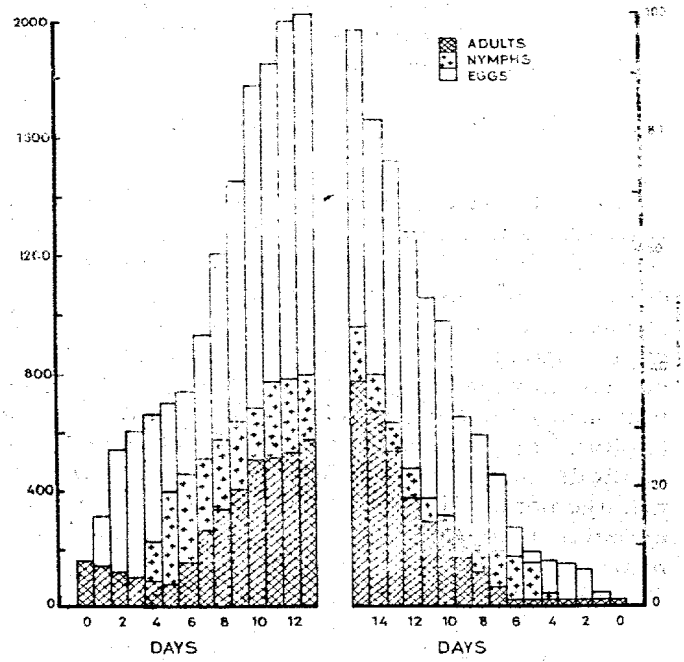

Fig. 4 Interaction between *A. ovalis* and *P. latus* at 1:150 ratio

(Fig.3). However, in the predator-prey ratio at 1:150, prey adults population decreased upto 5th day, later it never decreased in all the 3 stages till the end of experiment (Fig. 4). The above observations corroborate the observations made by Burnett (1971) in *Amblyseius fallacis* on *Tetranychus urticae;* McMurtry and Scriven (1971) in *Amblyseius limonicus* on *Oligonichus punicae* and Mallik (1974) in *Amblyseius longispinosus* on *Tetranychus ludeni.*

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