

EFFECT OF PREDATORY MITE *AMBLYSEIUS FINLANDICUS* OUDEMANS ON THE POPULATION OF PEST *TETRANYCHUS CINNABARINUS* (BOISD.) OF OKRA (*HIBISCUS ESCULENTUS* LINN. (MOENCH.))

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Mites are among the most significant pests of agricultural and horticultural crops causing serious losses. In addition, there are some beneficial mites which predate upon harmful mites and small insect pests and thus help in biological control and maintaining natural balance. The problem arises when such important creatures are not given due status and the indiscriminate use of insecticides further complicate it by killing them too fast than the mite pests. In the absence of these useful mites, whatever population of pest mite is left, it has an open field to multiply and destroy the crop almost completely. So, it is very important to understand the efficacy of these predatory mites. The earliest record of phytoseiid mites in India dates back to 1953 when *Amblyseius longispinosus* was reported on paddy from Coimbatore. Presently 13 species of *Amblyseius* are known from Punjab (Tagore & Putatunda, 1997). Of these *Amblyseius finlandicus* Oudemans is quite common and an effective predator of mites.

To understand the role of predatory mite *Amblyseius finlandicus* on pest mite *Tetranychus cinnabarinus*, a laboratory trial was conducted. The mites were collected from okra leaves in the field and then reared on leaf discs placed on moist cotton swabs in petri dishes. The predator and prey were released in the ratio of 2:5 and 2:10 and the observations were taken daily after 24 hours. The number of prey killed was noted and feeding potential of predatory mite was observed. One group in each ratio was kept as control on which no predator was released with the

pest mites.

It was observed that in 2:10 predator prey ratio, the predator took approximately 24 hours to feed upon its first prey and by day six, all the prey mites were consumed. The number of nymphal stages and adults on control plants recorded on sixth day was five and two, respectively. The number of prey consumed on different days is shown in table 1. In the 2:5 predator-prey ratio, the feeding efficiency of predator increased and the predator took approximately 12 hours to consume its first prey. The whole prey population was eliminated on third day. These laboratory studies reveal that the predatory mite, *A. finlandicus* is quite effective in checking the number of pest *T. cinnabarinus* in both the above predator-prey ratios. Similar observations have been made by Kumari (1984) at the five ratios studied between *A. finlandicus* and *Eutetranychus orientalis*. *A. finlandicus* took lesser time to eliminate prey population when the latter was lesser in number, i.e. ratio 2:5 as compared to high prey density i.e. 2:10. The time required to eliminate the prey increased with increasing prey density. These findings are supported by Kumari (1984) and Nangia and Channabasavanna (1983). The latter workers reported that *A. tetranychivorous* took maximum time for total elimination of *T. ludeni* at 1:30 predator-prey ratio on okra plants, whereas the time for total elimination of prey was comparatively less in case of other ratios i.e. 1:6, 1:12, 1:18 and 1:24. The greater length of time required to eliminate the prey at increased prey densities seems to be correlated with increased disturbance to predator. It has also been observed that the predators consumed the maximum number of prey during first two days. It means that as the density of prey increases, the predation also increases, so cautious approach is needed while spraying chemicals if the predators have started devouring the prey, especially during mid June and beginning of October.

References

- Kumari, N. (1984). *Biology and ecology of predatory mite, Amblyseius finlandicus (Oudemans) and its evaluation as biological control agent*. Ph.D. Thesis, Punjab Agricultural University, Ludhiana, pp. 208.
- Nangia, N. and G.P. Channabasavanna, (1983). Interaction between *Amblyseius tetranychivorous* (Acarina: Phytoseiidae) and its prey, *Tetranychus ludeni*. *J. Acarol.* 13(1&2): 49-53.
- Tagore, A. and B.N. Putatunda, (1997). Distribution of phytoseiid mites (Acar: Mesostigmata: Phytoseiidae) in India. *Agric. Rev.* 18(1): 13-26.

Table 1. Predatory potential of *A. finlandicus* and *T. cinnabarinus* on okra leaves

Time (In days)	Mean numbers of predators	2:10 predator-prey ratio		2:5 predator prey ratio		Control		Dead	
		Mean number of prey Living	Dead	Mean number of prey Living	Dead	Living Nymph	Adult	Nymph	Adult
2	2	4	6	1	4	0	10	0	0
3	2	3	1	0	0	0	9	0	1
4	2	2	1			2	7	0	2
5	2	1	1			4	4	0	3
6	2	0	0			5	2	0	2

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