

## ENVIRONMENTAL EFFECTS ON PRODUCTION OF A PLANT SYNOMONE THAT ATTRACTS PREDATORY MITES

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Spider mites are very ravenous herbivores that overexploit their host plants. However, when discovered by predatory mites, populations of the herbivore can be decimated. Thus, plants that harbour predatory mites are at a clear advantage. It is known that plants are involved in attraction of predatory mites *after* infestation by spider mites occurs (Dicke et al., 1989). In this paper, we report that plants may also attract predatory mites *before* spider mites inflict damage.

*Predator:* satiated female *Phytoseiulus persimilis* reared on two-spotted spider mite (*Tetranychus urticae*) on Lima bean. *Plants:* Lima bean, cucumber, tomato, *Solanum luteum*, and *S. dulcamara*. *Olfactometer:* A Y-tube olfactometer was used.

1. *Do plants attract predatory mites before spider mites inflict damage?* In the olfactometer we offered leaves of uninfested plants vs. clean air. Moist cotton wool was added in each arm. *P. persimilis* is attracted by an allelochemical emitted by uninfested Lima bean leaves and tomato leaves, but not by the other plant species tested (Table 1).

2. *Are there environmental effects on production of the volatile synomone? (2-a) Effects of light intensity on synomone production by Lima bean plants?* Plants were reared in green house (15 days) and subsequently placed at different light intensities. Leaves of plants placed at high light intensity (7000 lux) are more attractive than leaves of plants placed at low light intensity (2000 lux) (Chi-square test,  $P < 0.05$ ,  $n = 153$ ).

(2-b) *Effect of time of the year on synomone production?* Experiment (2-a) was carried out at different times of the year. The effect of light intensity, experienced by plants during 6 days prior to the experiment on predator response depends on the time of the year at which plants were reared (Fig. 1).

Table 1 Percent response of *P. persimilis* to intact plants vs. clean air.

Lima bean	Cucumber	Tomato	<i>S. liteum</i>	<i>S. dulcamara</i>
67.5 (80 <sup>1</sup> )	46.3 <sup>ns</sup> (80)	60.6 (80)	56.3 <sup>ns</sup> (80)	44.8 <sup>ns</sup> (66)

<sup>1</sup> Number of replications. Significance of difference from 50%, Chi-square test; \*p<0.05, ns: not significant

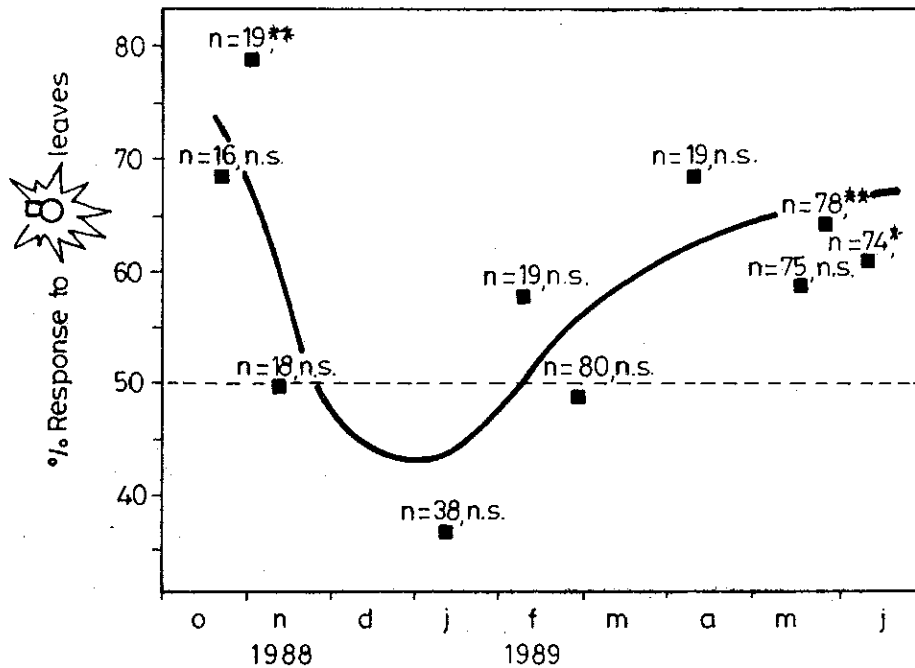


Fig. 1 Percent response to the highly lit leaves. n.s.=P>0.05; \*=P<0.05; \*\*=P<0.01.

Thus, plants may recruit their herbivores' natural enemies before attack by the herbivores, but whether they do so depends on the plant species and the condition of the plants.

#### REFERENCE

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