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EFFECT OF PARASITISM BY *MICROPLITIS DEMOLITOR* (HYMENOPTERA: BRACONIDAE) ON FOLIAGE CONSUMPTION BY *HELIOTHIS ZEA* (LEPIDOPTERA: NOCTUIDAE) LARVAE

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Food consumption by insects can be significantly reduced as a result of parasitism (Grant and Shepard 1984, Parkman and Shepard 1981, Rahman 1970). A few parasitoid species, however, cause their hosts to consume more food than nonparasitized ones (Hunter and Stoner 1974, Rahman 1970). Knowledge of changes in food consumption by a targeted pest may be important in considering numbers and timing of releases of a parasitoid for biological control. This information also may be useful in understanding the overall host-parasitoid relationship. Our objective was to compare foliage consumption between nonparasitized *Heliothis zea* (Boddie) larvae and those parasitized by *Microplitis demolitor* Wilkinson.

In our study, newly-hatched *H. zea* larvae (n=150) were randomly selected from a stock laboratory colony and were singly placed in petri dishes (100 x 15 mm) which were lined with moistened filter paper and which contained one pre-measured, field-grown soybean (var. Bragg) leaflet. Dishes were divided into two groups of 75 each. After 7 days, larvae of one group were individually exposed to parasitization by *M. demolitor* using the camel-hair brush method described by Shepard et al. (1983). After parasitization, larvae were returned to individual petri dishes which contained pre-measured soybean foliage. For comparision, the other group of larvae was held as described above but these were not exposed to female parasitoids (hereafter referred to as nonparasitized larvae). Each leaflet was removed and measured ca. every 2 days with a Licor Model LI-3000 portable area meter (Lambda Instr. Co.), and replaced with a fresh, pre-measured leaflet. To correct for shrinkage or expansion of leaflets, additional leaflets (n=20) were held individually in the same manner except that no larvae were placed in the dishes. This procedure was continued until death or pupation of all larvae. Foliage consumption by larvae that died before emergence of the parasitoid or pupation of the larva was not used in data analysis. Experiments were conducted in a rearing chamber at 27 ± 2°C, 60 ± 10% RH and a photoperiod of L:D 15:9.

Parasitized *H. zea* larvae consumed an average of 90.18% less foliage than nonparasitized larvae. The average total foliage consumption by parasitized *H. zea* larvae (n=34) was significantly ($P \leq 0.01$, t-test) less than that consumed by nonparasitized larvae (n=37) (29.80 and 303.50 cm^2/larva, respectively) (Fig. 1). In addition, the consumption rate for

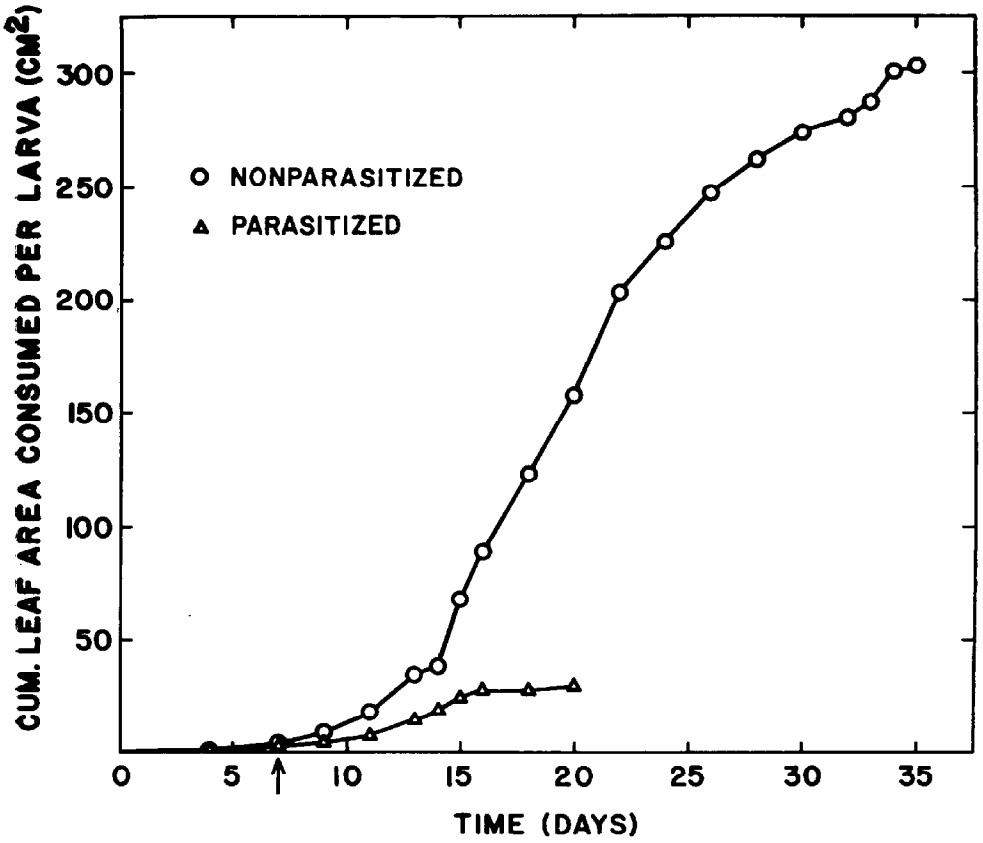

Fig. 1. Cumulative leaf surface area (cm^2) consumed by nonparasitized *Heliothis zea* larvae and those parasitized by *Microplitis demolitor*. Arrow ← denotes parasitization of *H. zea* larvae by *M. demolitor*.

parasitized larvae was much less than that for nonparasitized larvae (1.49 and 8.67 cm^2/day). Similar results were reported by Yanes and Boethel (1983) for larvae of soybean looper, *Pseudoplusia includens* (Walker) (Lepidoptera: Noctuidae), parasitized by *M. demolitor*. In our study, *H. zea* larvae parasitized by *M. demolitor* ceased feeding within 24 h after the parasitoid larvae exited the host (ca. 7 to 9 days after parasitization). Death of the host occurred ca. 48 h later.

Microplitis demolitor was imported from Queensland, Australia, in 1981, and the long-range objective of this importation is to establish, if possible, *M. demolitor* as a member of the natural enemy complex of *Heliothis* spp. and *P. includens* (Shepard et al. 1983). In addition to reducing pest populations, *M. demolitor* may, if established, significantly decrease defoliation by this pest.

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PARASITIC NEMATODE OBSERVED IN THE TROPICAL FIRE ANT, *SOLENOPSIS GEMINATA* (F.) (HYMENOPTERA: FORMICIDAE)

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Parasitic nematodes occur in ants of several genera (Nickle 1974), but have not been reported previously in fire ants *sens. str.*, *Solenopsis* (*Solenopsis*) spp. Recently we observed a single nematode in the gaster of each of nine workers of the tropical fire ant, *Solenopsis geminata* (F.). These ants were among 270 specimens that had been collected ca six months previously in pitfall traps at two sites in Alachua County, Florida, during an ecological study. They were preserved in 70% isopropanol, which causes the gasters of fire ants to become greatly distended. Subsequent sampling of *S. geminata* from this and other areas failed to yield additional parasitized specimens; therefore, we decided to report our observation now because it appears that considerable time may be required to find the nematode again.

The parasitized ants were detected by observing the white larval nematodes in the distended, partially cleared gasters. Due to the distortions of alcohol preservation, it was not possible to precisely visualize these ants as they appeared in life; however, we believe their gasters were enlarged. The presence of one parasite per host, their large size (ca 3 mm long) relative