

ABD-RABOU, S.

Plant Protection Research Institute, Agricultural Research Center, Dokki-Giza, Egypt

**PARASITOIDS ATTACKING THE MEDITERRANEAN BLACK SCALE,
SAISSETIA OLEAE (HEMIPTERA: COCCIDAE) ON OLIVE IN EGYPT.**

ABSTRACT

PARASITOIDS ATTACKING THE MEDITERRANEAN BLACK SCALE, *SAISSETIA OLEAE* (HEMIPTERA: COCCIDAE)
ON OLIVE IN EGYPT.

Saissetia oleae is an important pest of olive trees in Egypt. A survey of the parasitoids of *S. oleae* was carried out monthly between April 1995 and March 1997 in three different locations in Egypt. Five species of Encyrtidae, a species of Pteromalidae and an aphelinid hyperparasite were found. Three of these records were new for Egypt.

Key words: survey, rearing methods, percentage parasitism, *Diversinervus elegans*, *Metaphycus flavus*, *M. zebratus*, *Metaphycus* spp., *Scutellista caerulea*, *Marietta leopardina*.

INTRODUCTION

The Mediterranean black scale, *Saissetia oleae* (Olivier) (Hemiptera: Coccidae) is a serious pest of olives in many countries and has been recorded off about 115 host plant species (Ben-Dov, 1993). Recently, *S. oleae* has become a serious pest of olive trees in Egypt and has also been recorded on 8 other host species in 10 different localities (Mohammad & Nada, 1991). *S. oleae* causes serious damage to olive trees both indirectly, through the copious accumulation of honeydew acting as a substrate for the growth of sooty mould fungi, and directly by mass feeding.

The role of parasitoids in the biological control of *S. oleae* has been previously investigated in Egypt by Priesner & Hosny (1940), in Libya by Lal & Naji (1979), in France by Panis (1983), in the USA by Lampson & Morse (1992), in Israel by Argov & Rossler (1993), in Cyprus by Orphanides (1993) and in Greece by Argyriou & De Bach (1968).

The present study was conducted to determine the species and seasonal abundance of parasitoids of *S. oleae* on olive trees in three locations in Egypt.

MATERIALS AND METHODS

Olive trees with heavy infestations of *S. oleae* from three locations in Egypt (namely Northern coast & Matruh (about 150km and 350km west of Alexandria respectively), and El-Arish (north east Egypt)) were selected and

sampled monthly between April 1995 and March 1997. No chemical control for the pest was performed on these trees during the study.

In each location, twenty trees were selected randomly and sampled by collecting 10 *S. oleae* infested twigs (15 cm long) and 30 infested leaves. These were taken back to the laboratory where each twig or leaf was stored in a well-ventilated glass tube and monitored daily for parasitoid emergence. The percentage parasitism was calculated on the basis of the number of scales in each sample, with the assumption that only a single parasitoid emerged from each scale.

RESULTS AND DISCUSSION

Five encyrtid and a pteromalid parasitoid species were collected, plus an aphelinid hyperparasitoid:

Primary parasitoids:

Encyrtidae

Diversinervus elegans Silvestri

Metaphycus flavus (Howard)

Metaphycus zebratus (Mercet)

Metaphycus sp.I*

Metaphycus sp.II*

Pteromalidae

Scutellista caerulea (Fonscolombe)

Hyperparasitoid:

Aphelinidae

Marietta leopardina Motschulsky*.

(* = new records for Egypt).

At the North Coast location, four species were recorded (*D. elegans*, *M. flavus*, *Metaphycus* sp. II and *S. caerulea*). The total percentage parasitism was greatest during the period Sept. to Feb., reaching a peak of 47% in Oct. in the first year and 51% in Nov. in the second year. The overall percentage parasitism was 20.1% (first year) and 23.8% (second year).

At the El-Arish site, three species were recorded (*D. elegans*, *Metaphycus* sp. I and *M. leopardina*). The total percentage parasitism was greatest during the period Sept/Oct. to March, reaching a peak of 55% in Jan. in the first year and 76% in Dec. in the second year. The overall percentage parasitism was

23.2% (first year) and 34.6% (second year). The relative abundance of the three species in the two years was: *D. elegans*: overall 9.2% and 20%; *Metaphycus* sp. I: overall 9.8% and 12.2% and *M. leopardina*: overall 4.3% and 2.4% each year respectively.

At the Matruh location, only two species were recorded (*D. elegans* and *M. zebratus*). In both years, the total percentage parasitism was greatest during the period Oct./Nov. to March, reaching peaks of 37% and 25% in Nov./Dec of each year. The overall percentage parasitism was 17.0% (first year) and 9.3% (second year). The relative abundance of the two species in the two years was: *M. zebratus*: overall 10.5% and 4.4% and *D. elegans*: overall 6.5% and 4.4%.

Only *M. flavus*, *Metaphycus* sp. II and *S. caerulea* were recorded from Northern Coast area, where *Metaphycus* sp. II was the most abundant parasitoid. *M. zebratus* was recorded only from Matruh region, while *Metaphycus leopardina* and *M. sp. I* were recorded only from El-Arish site (where *Metaphycus* sp. I was the most abundant parasitoid). Only *D. elegans* was collected from all three sites but only at low levels; it was reported to be the dominant parasitoid of *S. oleae* in Israel (Rosen *et al.*, 1971). The latter workers also found *M. leopardina* to be an abundant hyperparasitoid in *S. oleae*. *Metaphycus* sp. I and II are completely different morphologically and are easy to separate.

The rather low percentage parasitism of *S. oleae* found here in Egypt in the present study in comparison with the levels noted in other countries suggests a serious need for the introduction into Egypt of additional specific natural enemies and parasitoids of this important soft scale.

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