

BIOLOGY AND BEHAVIOUR OF TELENOMUS SPP. (HYMENOPTERA: SCELIONIDAE) EGG  
PARASITIDS, ATTACKING SPODOPTERA SPP. (LEPIDOPTERA: NOCTUIDAE)

BY

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A thesis submitted for the degree of Doctor of Philosophy  
of the University of London and for the Diploma of  
membership of the Imperial College.



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## ABSTRACT

The main objective of this laboratory based study is to compare the biology and behaviour of eight Telenomus populations obtained from different parts of the world and from the findings to recommend which strain and/or species will be more suitable to control the eggs of Spodoptera spp. in the field.

The developmental time of the eight Telenomus populations were studied on Spodoptera littoralis and S. frugiperda and it was found that the developmental time of the Telenomus population from the Hawaiian region was longer than the others. Longevity was measured for each population in the presence and absence of the host. In all the Telenomus populations mated males are short lived and the longevity of mated females was reduced considerably when exposed to hosts.

The fecundity of these Telenomus populations was studied on S. littoralis and S. frugiperda. In both host species, the highest and lowest potential fecundity was recorded in the Telenomus populations from Barbados and Hawaii respectively.

Cross breeding experiments were carried out between the Telenomus populations from various sources to determine their genetic compatibility. Findings from these experiments indicate that there are two distinct biological species, T. nawaii (Hawaiian region) and T. remus (Barbados and elsewhere). Therefore further experiments on the biology and behaviour of these two biological species were carried out with additional host species,

S. exigua and S. exempta. The fecundity of both the biological species was significantly reduced when they were exposed to S. exigua. Although more females than males were observed in these naturally inbreeding populations, a male biased sex ratio was observed with increased parasitoid:host ratio of the two biological species.

In a multilayered eggbatch, both of these biological species were able to attack only a small proportion of the eggs in the lower layer. Finally the searching efficiency of the two biological species was compared on the host eggs laid on Brussels sprout and onion plants. It was found that, although T. nawaii finds hosts more rapidly, the searching efficiency (attack rate) was higher for T. remus. The two parasitoid species showed no behavioural differences in attacking eggs laid on these two plants.

Based on the biological parameters tested in this study T. remus Barbados is a better choice than T. nawaii in many aspects and could be recommended for future use.

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