

ABSTRACT

In this study, aspects of the population interaction of the important brassicaceous pest Plutella xylostella (L.) and its larval parasitoid Apanteles plutellae (Kurdj.) were examined in the laboratory and in the field. In both situations, A. plutellae foraged selectively among heterogenously distributed Plutella larvae. A. plutellae aggregated by selecting for, and residing longer on patches of high host densities.

The parasitoid's functional response, searching efficiency, and the variation with host density of handling and searching time, were examined.

Density-dependent parasitism was observed up to certain critical host densities, beyond which inverse density-dependence was evident. Interference effects among high populations of foraging A. plutellae in the laboratory resulted in density-independent parasitism across the optimal set of host patches. In the field, parasitism increased with increasing host population during a single cabbage crop. Where nine successively grown crops conferred some degree of permanence, the rate of parasitism increased with successive crops, and density dependent parasitism contributed significantly to reduction of the pest population in later crops.

The interaction showed a high degree of stability and despite very high levels of parasitism, crop loss was still very severe. The high reproductive rate and high dispersal ability of P. xylostella are advantageous to the species in maintaining its high populations in areas where brassica crops are grown.