

In East and Southern Africa (ESA), the noctuid *Busseola fusca* and the exotic crambid *Chilo partellus* are among the most important lepidopteran stemborer pests of cereal crops. In western Africa, the scelionid egg parasitoids *Telenomus busseolae* and *Telenomus isis* are the most important biotic control agents of noctuid stemborers such as *Sesamia calamistis* and *B. fusca*. *Telenomus isis* had never been reported from ESA and was thus introduced into the International Centre of Insect Physiology and Ecology (ICIPE) laboratories in 2003 for possible release against *B. fusca*. This study aimed at assessing the potential of egg parasitoid, T. isis, as a biological control agent against *B. fusca* in ESA. Distribution and parasitism of noctuid stemborer eggs was assessed in some localities in Kenya. *Busseolae fusca* was the most prevalent species in high altitude areas (> 1500 m above sea level) but it co-existed with *S. calamistis* in mid altitude areas (500-1200 m above sea level). The highest egg parasitism rate (32.6%) was recorded in Kiboko with *Telenomus busseolae* dominated the egg parasitoid community followed by the trichogrammatid *Trichogramma bournieri*. Host acceptance and suitability were assessed using fifteen lepidopteran borer species. Only noctuid stemborers were successfully attacked by T. isis. Parasitism rate and developmental time significantly varied between the major borer species tested (*S. calamistis*, *Sesamia botanephaga*, and *B. fusca*) but no significant differences were observed in sex ratios (expressed as a proportion of female progeny). With increasing duration of host deprivation from 0 to 14 days, longevity for the three-stemborer species increased, whereas mean fecundity decreased, indicating resorption of eggs. The effects of temperature, humidity and host species on the bionomics of T. isis were studied. The lower and upper threshold for development were estimated at 10.6 to 36.5°C respectively, and the optimal temperature for development was between 30.5°C to 31.5°C for the three stemborer species and both two relative humidities. Furthermore, the effects of host species, host age and duration of host deprivation on the performance of *Tr. bournieri*, a polyphagous parasitoid of eggs of several cereal stemborer species in eastern Africa was evaluated as part of an interspecific competition study. The noctuids *S. calamistis*, *S. nonagrioides* and *B. fusca*, and the crambid *Chilo partellus* and pyralid *Eldana saccharina* were successfully parasitized by *Tr. bournieri*. Parasitism rate, number of progeny and developmental time of *Tr. bournieri* varied significantly among the host species. *Sesamia calamistis* and *B. fusca* eggs were the most suitable hosts, while *E. saccharina* was the least suitable host. While parasitism rate and the number of progeny tended to decrease with the age of host eggs, there were no significant differences in the sex ratio. Longevity of the parasitoid increased with increase in deprivation of hosts from 0 to 12 days. The mean lifetime fecundity per female decreased with increased of host deprivation increased, indicating resorption of eggs. In addition, oviposition behaviour of T. isis and two other indigenous parasitoids (*T. busseolae* and *Tr. bournieri*) were studied using *S. calamistis*, *S. botanephaga* and *B. fusca* as hosts to evaluate the degree of self-super, and superparasitism. Four distinct steps of behaviour were observed: foraging, palpitation with antennae on the eggs, insertion of ovipositor and egg marking. Walking and resting were observed less frequently than the other behaviours. On average, insertion of ovipositor took 2 to 3 minutes per female. *Telenomus isis* females responded promptly to the calling virgin female moths indicating that the parasitoid uses pheromones to find the host eggs