

FINAL REPORT

PROJECT TITLE: DAQ22L AN EVALUATION OF THE POTENTIAL OF EGG PARASITES FOR THE CONTROL OF HELIOTHIS IN COTTON.

RELATED PROJECT: DAQ39L EGG PARASITES FOR HELIOTHIS CONTROL IN COTTON.

PERIOD: July 1985 - June 1988.

ORGANISATION: Queensland Department of Primary Industries.

LOCALITY: Toowoomba.

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SUMMARY

Heliothis armigera and *H. punctigera* are serious pests of cotton in Australia. Control of *Heliothis* is currently dependent on insecticides. Levels of resistance to several of the major chemical groups of insecticides is sufficient to threaten the long term use of them for *Heliothis* control. This project evaluated one alternative non-chemical form of *Heliothis* management that may have potential to be used alone or in combination with other techniques - egg parasitoids. In the past, field trials with egg parasitoids in Australia have involved releasing an introduced species that was readily available from overseas research institutions. This project was the first attempt to evaluate native egg parasitoids for *Heliothis* control in cotton.

Six species of egg parasitoids were collected from field crops in Queensland. Of these, four species were new records for the State. Laboratory colonies of egg parasitoids were established so that the potential of each species for use as a biocontrol agent against *Heliothis* could be evaluated.

Laboratory and glasshouse studies found significant differences in *Heliothis* parasitism levels, temperature adaptations, host-plant adaptation, host handling behaviour, host acceptance behaviour and host searching efficiency between different species of egg parasitoids.

Pre-release evaluation studies clearly indicated that two species of egg parasitoids (*Trichogramma carverae* and *Trichogrammatoidea bactrae*) have potential for *Heliothis* management and should be evaluated in field trials in the future.