

Poster paper

Soldier fly management: insecticide efficacy and varietal tolerance in field trials

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Soldier flies (*Inopus flavus* and *I. rubriceps*) are an economically damaging pest of sugarcane that can periodically cause major yield losses for some growers in central and southern Queensland. Larvae alter plant growth by feeding on roots. There is currently no insecticide registered for soldier flies.

Our objectives were to identify management solutions for soldier flies by assessing insecticide efficacy and varietal tolerance in field conditions.

To test insecticides, we established four randomized-block trials and quantified soldier fly larvae annually for 3 years. Each trial tested 5 to 8 insecticides at varying application rates applied at fill-in on plant cane. The number of soldier fly larvae collected in one of the trials was too low for statistical analysis. In all remaining trials, there was no difference in numbers of soldier flies among untreated plots and any of the insecticide-treated plots (GLMM: poisson, all post-hoc tests $p>0.05$). Additionally, the number of soldier flies collected for two 3-year trials increased with ratoon number (1.7–3.2 times more larvae/year, GLMM: poisson, $p<0.001$) regardless of treatment.

To assess varietal tolerance, we established four randomized-block trials for 3 years. Each trial contained 7 to 10 varieties. Numbers of soldier flies were too low in two of our trials for statistical analysis. In the remaining trials, some varieties tended to host less larvae, although post-hoc tests were not significant (GLMM: poisson, $p>0.05$ for all post-hoc tests).

As under field trial conditions none of the insecticides tested reduced the number of larvae, future research needs to include laboratory bioassays to determine whether the active ingredients are ineffective against soldier fly larvae, or whether the application method is suboptimal, because larval build up takes at least 3 ratoons. Additional research into varietal tolerance to soldier fly is needed to determine whether varietal choice can help limit damage.

Key words Insecticides, varieties, feeding