POSTER SUMMARY

CROP YEAR EFFECTS ON THE SELECTION OF FAMILIES WITH LOW ELDANA DAMAGE FOR THE COASTAL LONG-CYCLE BREEDING PROGRAMME POPULATIONS

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Abstract

The *Eldana saccharina* (eldana) stalk borer is an insect pest that damages sugarcane in South Africa and causes severe economic losses that are estimated at around R1 billion/annum. The objective of this study was to determine crop year effects on sugarcane breeding populations for eldana damage for the coastal long-cycle breeding programme. Data for Percent Bored Stalks (PBS) was obtained from the mini-line trials planted at Gingindlovu in 2013, 2014 and 2015. The first 20 sub-plots of each family plot were inspected and the number of damaged stalks were recorded and converted into PBS. The results showed a significant ($P<0.001$) family effect on the populations planted in 2014 and 2015, indicating high variability in eldana damage among families in those years. They also indicate the ability to identify and select families with low damage and to discard those with high damage. The trials had mean levels of PBS ranging from 42.26% for 2013, to 55.95% and 67.66% for 2014 and 2015 respectively. Broad sense heritability was higher for 2014 population than both 2013 and 2015 populations suggesting higher family variability for in that year and possibly a higher discriminating ability. The results suggest that there is a high ability to identify and select families with low damage during a high eldana infestation. The 2014 population produced higher predicted selection gains indicating a high probability of achieving high realised selection gains. The results suggest that there might be a need to optimise eldana damage sampling during low-infestation years, and to increase the accuracy of identifying low-damaged families.