

POSTER SUMMARY**LINKING *ELDANA SACCHARINA* BIOLOGY AND *BACILLUS THURINGIENSIS* CRY PROTEIN EXPRESSION IN TRANSGENIC SUGARCANE**

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The sugarcane stem borer *Eldana saccharina* (Eldana) causes losses to the South African sugar industry in excess of R1 billion annually if not adequately managed. Genetically modified (GM) sugarcane expressing the *Bacillus thuringiensis* (Bt) lepidopteran-specific insecticidal protein (Cry1A) has potential to control Eldana and related borer pests (e.g. *Sesamia calamistis* and *Chilo sacchariphagus*) in South Africa. Developing an understanding of where Bt Cry protein is produced in the sugarcane plant and applying this to how Eldana larvae feed are key determinants affecting insect management in the field, once commercial release takes place. Samples of two GM sugarcane lines were tested for the presence of the Cry protein using commercially available EnviroLogix™ lateral flow strips. Although Cry1A protein was detected throughout both plants, band intensity varied from 0.5 (low) to 3 (high) between the samples and within lines, indicating variation in gene insertion and subsequent expression patterns. However, should newly hatched Eldana larvae forage behind or on leaf sheaths, on bud scales and root primordia prior to boring into the mature stem, they will be exposed to Bt protein. Linking expression information with the biology and feeding habits of Eldana will enable development of the most suitable GM line for industry deployment. Future work will involve the assessment of GM lines using Eldana pot-based bioassays.

Keywords: *Eldana saccharina*; genetically modified sugarcane; Cry1A expression; Eldana feeding habits