



# OPPORTUNITY FOR MSc STUDY

## SASRI Crop Biology Resource Centre

### Characterising Induced Resistance in Sugarcane

#### ● Background

Plant activators such as cis-Jasmone, Ethrel, BABA and Bion™ can prime plants to rapidly respond when attacked, or they can induce resistance before attack dependent on dose. There is some evidence that genotypic differences exist in ability to respond to externally applied plant activators. This project aims to characterize the ability of various modern and wild *Saccharum* genotypes to respond to priming and induction of resistance responses against several biotic challengers.

#### ● The Project

Direct resistance responses to priming and inducing concentrations of the resistance activators cis-Jasmone, Ethrel, BABA and Bion™ will be investigated. This will involve comparing responses of genotypes, with and without activators, to challenge by sugarcane thrips, brown rust (both of which attack the leaves) and root-parasitic nematodes. In primed plants, defence responses are not activated by the priming agent but are accelerated following perception of pest or pathogen challenge, resulting in an enhanced level of resistance. Higher doses can induce resistance before the plant is challenged, but this can be at some metabolic cost.

We will also explore underlying functional genomics. Suitable cDNA subtractions (e.g. SOS releasing – non releasing, cisJ root – cisJ shoot) will be set up and libraries created using a Clontech SSH cDNA subtraction kit. Libraries will be screened and differentially expressed sequences of interest will be identified using Blast analysis. Methylation sensitive AFLP will be used to detect epigenetic changes involved in defence priming, if any. Additional information is available on request.

#### ● The Candidate

The ideal candidate must hold a BSc Honours degree encompassing the plant sciences and be enthusiastic about molecular biology and biotic interactions. This is a team-orientated project and the ability to get on with others is essential, as is a generous disposition.

#### ● The Position

The successful candidate will be provided with a competitive bursary and a dynamic, well-resourced and friendly working environment. Though not an essential requirement, candidates seeking to secure free-standing NRF funding are encouraged to apply.

#### ● The Contact

A résumé and covering letter should be sent before 25<sup>th</sup> September 2009 to:

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