



OPPORTUNITY FOR MSc STUDY

SASRI Crop Biology Resource Centre

Unlocking Genetic Variation in Sugarcane for Disease Resistance

● The Problem

Sugarcane cultivars are released after a long plant breeding selection process during which multiple beneficial traits are targeted, in particular yield and sugar content. Released cultivars are often susceptible to at least one major fungal pathogen which can limit their geographic distribution and level of grower adoption. A possible solution to this problem is the generation of resistant lines from otherwise elite susceptible cultivars by exploiting epigenetic and mutational variation.

● The Project

The aims of the project are to identify sugarcane lines, derived from susceptible genotypes, that are resistant to the biotrophic fungal pathogen *Ustilago scitaminea*, the causal agent of smut, and to necrotrophic fungal pathogens causing stalk-rots. The potential for resistance will be induced through *in vitro* generation of epigenetic (somaclonal) variation using a methylation inhibitor, and sequence mutation through the use of selected chemical mutagens. An established sugarcane micro-propagation protocol will be modified in order to screen for resistance to toxins produced by the necrotrophs and through the direct *in vitro* inoculation of the biotroph. Steps will be taken towards identifying any changes in gene expression that lead to resistance using molecular methodology. Regenerated plants will be further characterised using methylation sensitive and insensitive AFLP. 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 plant pathology, molecular biology and biotechnology. 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 who are in the process of securing free-standing NRF funding are strongly encouraged to apply.

● The Contact

A résumé and covering letter should be sent before 25th September 2009 to:

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