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**CALLUS INDUCTION, PLANT REGENERATION AND
AGROBACTERIUM-MEDIATED TRANSFORMATION OF RICE
VARIETY Bg-250**

A PROJECT REPORT PRESENTED BY

PRIYA UPUL ABEYWICKRAMA

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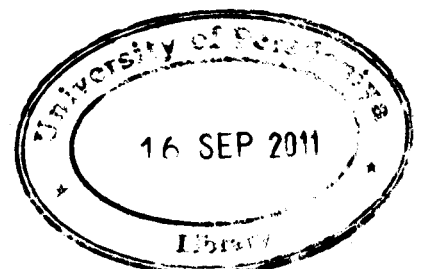
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P. U. Abeywickrama

Department of Chemistry

University of Colombo

Sri Lanka

Rice is the most important food crop in the world, and feeds over half of the global population. The improvement of rice varieties for its quality and quantity is therefore crucial to; comply with ever increasing human population. The development of new rice varieties with desired genes to overcome abiotic or biotic stresses or to improve yield is possible by applying recombinant DNA technologies.

In this research we have taken an attempt to standardize the most feasible technique, *Agrobacterium*-mediated transformation, for rice in order to introduce desired genes into rice. In the first phase of research the embryogenic scutellum derived from calli induction and plant regeneration of Sri Lankan rice varieties of Bg-250 and Bg 94-1, were established. The callus induction and regeneration were carried out on N₆B₅ medium, while root induction was carried out on MS medium. The Bg-250 embryogenic calli were transformed from the *Agrobacterium* strain GV3101 which is harbouring pCAMBIA1303. The putative transformed calli and untransformed calli were determined by using GUS Assay.

The Bg 250 and Bg 94-1 calli induction efficiencies were 69%, 74% and the average calli diameter were 11.26mm, 11.48mm respectively. The shoot induction efficiencies were 78%, 77% and the average shoots per calli were 17, and 20 respectively. The average root



inductions were 14 and 15 respectively for Bg-250 and Bg 94-1 varieties. After acclimatization mature seeds were obtained from the regenerated Bg 250 variety.

The results suggested that there was no difference between the Bg-250 (tested variety) and the Bg 94-1 (control variety) for calli, shoots and root induction. *In vitro* regenerated plantlets were successfully established in soil until their maturity for both varieties were reached. Seventy percent of the transformed rice calli showed positive results in GUS assay revealing the *Agrobacterium* mediated transformation protocol carried out for Sri Lankan rice variety was successfully optimized.