

Plant regeneration *in vitro* of three Sri Lankan rice varieties (*Oryza sativa* ssp. *indica*)

M P Christie¹, I C De Silva², and M C M Iqbal^{3*}

^{1,3} *Plant Reproductive Biology, Institute of Fundamental Studies, Hantana Road, Kandy*

² *Department of Crop Science, Faculty of Agriculture, University of Ruhuna, Mapalana, Kamburupitiya*

Induction of callus and plant regeneration in rice is important due to its applicability in rice transformation. Furthermore callusing has been utilized as a means of obtaining somaclonal variants. A pre-requisite for this is reliable and repeatable callus induction and plant regeneration. The establishment of callus and plant regeneration from *indica* varieties of rice is more difficult than from *japonica* varieties.

Mature embryos of three varieties of *indica* rice (BG 350, BG 304 and Dhahenala) were used as explants. MS medium supplemented with 4-amino-3,5,6-trichloropicolinic acid (picloram), 3,6-dichloro-o-anisic acid (dicamba) and 2,4-dichlorophenoxyacetic acid (2,4-D) at two levels (1 mg/ L and 2 mg/ L) were used. Scutellar derived calli were subcultured four times at weekly intervals after which they were transferred onto regeneration medium, which contained MS basal medium, supplemented with benzylaminopurine (2 mg/ L), naphthalene acetic acid (1 mg/ L) and kinetin (1 mg/ L).

All three genotypes produced callus. The effect of genotype was significant in all the auxin treatments tested (0.05 probability level). Callus fresh weight was used as an index to study the rate of proliferation of the callus. Callus fresh weight ranged from 7-60 mg. Of the three genotypes tested BG 350 produced calli of higher weight than did those of BG 304 or Dhahenala. The genotype also had a significant effect on green shoot bud initiation. All three varieties produced green shoot buds. Of the three genotypes tested, BG 350 showed the highest incidence of green shoot bud initiation frequency (60%-100%). The green shoot buds produced plantlets. The plantlets were successfully hardened by sub culturing through a series of media containing half the concentration of MS macro salts and sugar as the previous medium. Preliminary results show that neither the different auxin treatments nor genotype auxin treatment interaction was significant in the parameters tested. The study shows that callus induction and plant regeneration is possible with all three local varieties studied. It is necessary to screen more genotypes to identify callusing and plant regeneration potential among local varieties, for eventual use in plant transformation experiments.

* mcmif@hotmail.com