

Callus Induction and Plantlet Regeneration Ability of Selected Sri Lankan Traditional Rice Cultivars (*Oryza sativa* L.) in Caryopses Culture

N. Dahanayake[†], A.L. Ranawake and U. Wanitunga

Department of Agricultural Biology, University of Ruhuna, Sri Lanka

[†]nilanthi@agbio.ruh.ac.lk

Abstract: A total of forty Sri Lankan traditional rice varieties (*Oryza sativa* L.) were examined for their callus induction, growth and regeneration ability at Laboratory of Agricultural Biology, Faculty of Agriculture, University of Ruhuna. Surface sterilized rice seeds (caryopses) were cultured on four different callus induction media supplemented with 1.5, 2.5, 3mg/l 2,4 – dichlorophenoxy acetic acid (2,4-D) and 0.1 mg/l 6 – benzyladenine (BA) on Murashige and Skoog's (MS) basal medium. Proliferated calli were regenerated on 3 different regeneration media supplemented with 1.5, 2, 2.5, 3 mg/l BA with 0.1 mg/l naphthaleneacetic acid (NAA). Eighty seven point five % of rice cultivars were able to produce callus on callus induction medium and among them 12.5 % of rice cultivars regenerated shoots. 100% callus induction was recorded by 75% of tested rice cultivars on 2.5 mg/l 2,4-D MS basal medium while the callus induction percentages were 30% and 32.5% in 1.5 mg/l 2,4-D and 3 mg/l 2,4-D media, respectively. The callus growth of rice cultivars showed significant difference with the cultivar and with the medium. By the 4th week of callus induction the maximum diameter of the callus recorded by rice cultivar *Herath* on 2.5 mg/l 2,4-D with 0.1 mg/l BA MS basal medium. The regeneration ability of rice cultivars were varied from 0 % to 100% while the highest regeneration was recorded in rice cultivar *Herath* on regeneration medium supplemented with 2.5 mg/l BA and 0.1 mg/l NAA. Callus induction % were varied from 0% - 100% while *Dik wee*, *Herath*, *Pachchai Perumal* and *Rathu wee* were observed significantly highest callus formation. *Sudu bala wee*, *Kahata wee* (long grain), *Sudu heenati*, *Kahata samba* and *Muthumala* failed to initiate callus on any of the medium. The highest shoot regeneration percentage was found in *Herath* (100%) while *Mas samba*, *Seedevee*, *Dostara heenati* and *Rathel* were also categorized in to the same DMRT (Duncan's Multiple Range Test) group with *Suduru Samba*. The highest number of shoots (8 shoots/callus) was recorded in *Sudhu samba* compared to other varieties (0.1-8per explant). There was a significant interaction between callus induction medium and rice cultivar as well as regeneration medium and rice cultivar.

Keywords: *Oryza sativa* L., Traditional rice, callus, Regeneration