B-66 A study on salinity tolerance in rice (*Oryza sativa*L.) through cell culture techniques

R Basnayake, K Hirimburegama
(*Dept of Botany, Univ. of Colombo, Colombo 3*)

Rice (*Oryza sativa* L., Family Poaceae) is one of the most important cereal crops, feeding more than half the world's population.

Salinization of rice growing soils is a major threat to rice production. Although at present, high yielding cultivars of rice are used extensively in Sri Lanka, these are becoming less valuable due to the increasing salinity of rice cultivated soils.

Development of salt-tolerant high-yielding cultivars, is being extensively researched worldwide, and tissue culture techniques are an invaluable tool in such crop improvement programmes.

The long term objective of the present study is to improve salinity tolerance in some high-yielding cultivars. The short term objective being the establishment of salt-tolerant cell lines and subsequent plant regeneration (through cell and tissue culture techniques). AT-354 and BW-351 used in the study, are 2 high-yielding cultivars grown in Sri Lanka.

Embryo of the rice grain was used as the explant for callus development on Murashige and Skoog medium supplemented with 2.0 mg/l 2,4-D and 1 g/l casein hydrolysate. Calli were used to initiate cell cultures in IRRI medium

supplemented with 2.0 mg/l BAP. The cells were screened for tolerance at 2,4,6,8 and 10 ds/m salinity levels. In both cultivars, salt tolerance of cells with time was determined. AT-354 cultivar exhibited a higher level of tolerance than BW-351 cultivar, at the cellular level. AT-354 could tolerate upto 8 dS/m level while BW-351 showed a favourable tolerance upto 4 dS/m level at the cellular level.