B-146 A comparative study on the salinity tolerance of *Oryza sativa* L. (rice) through plant cell culture techniques

B I P Ariyatillake, K Hirimburegama
Dept of Botany, University of Colombo, Colombo 3

Rice (*Oryza sativa* L.) is the staple food of half of the world's population. In Sri Lanka rice cultivation is faced with an increasing problem - salinization of rice growing land. Therefore studies on salinity tolerance with the objective of developing tolerance in high yielding varieties are important.

The main objective of this study was to compare and establish salt tolerant cell lines in the varieties At 402, At 303, Bg 94/1, Bg 300, Bw 267/3, Bw 451 and Bg 403, through plant cell and tissue culture techniques.

Dehulled, surface sterilized rice grains were inoculated on Murashige and Skoog (MS) medium supplemented with 1.0 g/l casein hydrolysate, 2.0 mg/l 2,4-D, 3% (w/v) sucrose and solidified with 0.8% (w/v) agar. The medium was selected from previous work done in the laboratory. Cell cultures were obtained by inoculating the calli in IRRI medium supplemented with BAP (2.0 mg/l), sugar (3% w/v) and ascorbic acid (1.0 mg/l) at 0,2,4,6,8,10 ds/m salinity levels. At 7 day periods the cultures were observed for plasmolysis and viability of cells.

Cullus initiation, morphology and growth varied among the 7 varieties. BW 451 showed a higher callus growth compared to other varieties. The callus cells of varieties Bw 451, Bw 267/3, Bg 94/1, At 402, At 303 could tolerate up to 8 ds/m (18% tolerance), 6 ds/m (14% tolerance) and 4 ds/m (32% tolerance), 10 ds/m (75% tolerance) 10 ds/m (55% tolerance), salinity levels respectively. A similar trend is also reported in the tolerance at field level.

Of the varieties used in the study, At varieties appear to have a better tolerance than the BG & BW varieties. It appears that the overall tolerance of the variety to salinity is reflected even at the cellular level. However, individual cells may show a difference in salinity tolerance.