

Korawan Songkwamdee 2012: Selection for Drought Tolerant Callus of Ruzi Grass *Urochloa ruziziensis* (R.Germ. & C.M.Evrard) Morrone & Zuloaga using Polyethylene Glycol 6000  
Master of Science (Botany), Major Field: Botany, Department of Botany. Thesis Advisor:  
Associate Professor Malee Nanakorn, Ph.D. 85 pages.

Ruzi grass is a pasture grass which possesses high nutrition, however, it is unable to adapt to grow in a long duration of drought. Therefore, calli of ruzi grass were induced on MS medium supplemented with 0-15.8  $\mu\text{M}$  and proliferated by 0-9  $\mu\text{M}$  2, 4-D for 28 days. The optimum concentrations for callus induction and proliferation were 13.5 and 9  $\mu\text{M}$  2, 4-D, respectively. The calli were exposed to 0-20% polyethylene glycol 6000 for 42 days to find the PEG concentration for selection drought tolerant calli. The results indicated that the calli were unable to grow when increasing PEG concentration to 15-20 % and the 50% lethal dose ( $\text{LD}_{50}$ ) of PEG was 12%. This PEG concentration was used for selection of drought tolerant calli from 220 seeds. It was found that the most two tolerant calli; clone number 1-101 and 2-100, had highest increasing dry weight (128.34 and 103.69 %control, respectively) and the less two tolerant calli, clones number 1-095 and 2-096, had lowest increasing dry weight (78.85 and 77.41 %control, respectively).

Some physiological changes concerning on osmotic adjustment; changing of fresh and dry weight, osmolality, water content, ion and proline content in calli of 4 selected clones when exposed to PEG 0, 5, 10, 15 and 20% for 30 days were study. The characteristics which related to the highest drought tolerance of clone 1-101 were the accumulation of  $\text{K}^+$  when PEG concentration increased whereas water content decreased. However, the calli were still grown resulted in increasing of dry weight higher than control. These changes indicated the mechanism of drought tolerance and will be able to use for selection drought tolerant calli. The characteristics which related to the lowest drought tolerance of clone 1-095 were the increasing of proline accumulation as same as the increasing of osmolality whereas the water content was decreased. However, the increasing of dry weight was much lower than the control.

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Advisor's signature