Plant regeneration via somatic embryogenesis of tropical maize (*Zea mays* L.) commercial hybrid lines

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Abstract

Four commercial tropical maize genotypes (H627, H625, H513 and DLC1) were screened in vitro for callus initiation and plant regeneration from immature embryos. Callus was initiated on N6 medium supplemented with varying concentrations of 2,4-D, 3% sucrose, 10 mg l-1 silver nitrate, 100 mg l-1 casein hydrolysate and 2.875 mg l-1 proline. The induction of embryogenic and primary callus highly dependend on the concentration of 2,4-D, genotype and day after pollination of immature embryos. H627 displayed the highest percentage of embryogenic callus formation from immature embryos 16 days after pollination (45.1%) and 20 days after pollination (28.3%). The percentage of embryogenic and primay callus initiated from immature embryos 16 days after pollination was significantly higher compared to 20 days after pollination ($p<0.05$). Somatic embryos were matured on N6 medium supplemented with 6% sucrose and 1 mg l-1 NAA. Primary regenerants (Ro) or shoots were obtained on MS medium supplemented with 3% sucrose. The number of shoots formed ranged between 5.5 and 12 per culture vessel. H627 had the highest mean number of shoots formed which was significantly different from other genotypes ($p<0.05$). Root formation was achieved in half strength MS medium supplemented with IBA. Primary regenerants were successfully transferred into the greenhouse and grew to maturity to set seeds in primary regenerants (Ro) and their progeny (R1). The build up of knowledge on the regenerative response of maize could not only be important for improvement of tissue culture response of elite genotypes but will also accelerate their improvement via genetic transformation technology.