

Four Tanzanian open pollinated maize varieties namely; Kito, Situka M-1, Staha and TMV-1 were regenerated *in vitro* using immature zygotic embryos as ex-plants. Callus induction was achieved using Murashige and Skoog (MS) basal medium supplemented with 1, 1.5, 2 or 2.5 mg/l of 2, 4-D. Callus induction was significantly affected by the genotype of the varieties. Among the varieties tested, Kito, Situka M-1 and Staha had significantly higher callus induction frequency of 84.4, 92.7 and 88.7%, respectively compared to TMV-1 (43.3%). Embryogenic callus induction percentage was significantly influenced by the genotype, 2, 4-D concentrations and their interaction effect implying differential response of the genotypes to 2, 4-D concentrations. Among the genotypes tested, Kito gave significantly ( $p < 0.05$ ) the highest embryogenic callus frequency of 69.5%. Great variations were observed among the genotypes with regard to regeneration frequencies. Staha was comparatively the most regenerable variety with RF of 32.6% than even Kito which had the highest callus induction and embryogenic callus formation. MS medium amended with 1 mg/l 2, 4-D was observed to be the optimum formulation for the induction of embryogenic calli for genotypes tested in this study. Using this regeneration system Situka M-1, Staha and TMV-1 can now be improved against various production constraints through genetic engineering.