

Abstract

Maize is one of the most important cereal crops in Sub-Saharan Africa and an important source of energy for humans. However, the difference in the dedifferentiation frequency of immature embryos among various genotypes indicates that callus induction and genetic transformation is dependent on the genotype. This phenomenon is an impediment in the fundamental process of improving tropical maize germplasm especially through genetic engineering. Here, five tropical maize (*Zea mays*L.) genotypes were tested for callus induction and subsequent regeneration on MS medium supplemented with a growth regulator dicamba. Genotype-independent embryogenic calli were induced from immature zygotic embryos, 12 days after pollination, of maize inbred lines, CML216, CML144, A04, E04 and TL21 on MS medium supplemented with different levels (1 to 5 mg/L) of plant growth regulator dicamba. The optimal concentration of dicamba for induction of embryogenic callus in all the genotypes was 3 mg/L, which was also the concentration at which non embryogenic callus formation was lowest. The frequency of embryogenic callus induction ranged from 34%–79%, with genotype CML 216 having the highest frequency at this optimal concentration of dicamba. Somatic embryos obtained germinated plantlets and produced normal R1 progeny of regenerants (R0). This regeneration method is expected to facilitate the development of a more efficient genotype independent Agrobacterium mediated transformation system for Kenyan adopted tropical inbred lines.