Influence of genotype and age of explant source on the capacity for somatic embryogenesis of two Cavendish banana cultivars (Musa acuminata Colla, AAA)


Abstract:

The embryogenic capacities of flower explants from one- and two-week-old male inflorescence buds from Musa acuminata Cavendish, AAA, genotypes ‘Williams’ and ‘Grand Naine’ were investigated. Explants of hands with immature flowers were excised and induced for embryogenesis. Highly significant differences were found in the embryogenic response, depending on the genotype and the developmental stage of the buds from which the explants were excised. After four months of induction, the total percentage of callus formed ranged from 97.81% in explants of two-week-old ‘Williams’ buds to 52.11% in explants of two-week-old ‘Grand Naine’ buds. Embryogenic callus formation was, on average, higher in the two-week-old ‘Williams’ explants (10.01%) than in the one-week-old explants (0.78%). The opposite was true for ‘Grand Naine’, with 7.51% embryogenic callus produced in explants of one-week-old buds compared to 2.49% in two-week-old buds. Selected embryogenic calluses that were successfully established on proliferation medium led to embryogenic cell suspensions with good regeneration capacities. Fifteen to thirty-five percent of the embryos germinated, demonstrated high plant-conversion capacity (99%). The effect of the interaction between the developmental age of explant and the genotype on the embryogenesis response is discussed.

Keywords:

Musa, embryogenic callus, genotype, male bud age, Cavendish banana.

Published In:

African Journal of Biotechnology , 9 , 2216-2223