

Interaction Effect of Indole-3-Butyric Acid and ?-Naphthalene Acetic Acid on In Vitro Rooting of Two Sugarcane (*Saccharum officinarum*) Genotypes

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Abstract :

In Ethiopia, sugarcane is being grown as an important cash and industrial crop among many crops and plays an important role for the development of the economy of the country. Improvement of this crop through conventional breeding takes 8 to 10 years and its propagation by cutting takes 6 to 7 years for commercial scale. During these periods of years the crop might start to deteriorate genetically by biotic and abiotic factors. To solve the limitations, tissue culture (micropropagation) was born as best alternative. Once millions of shootlets multiplied in vitro by micropropagation, they should have roots to be transplanted to the field. Hence, this research was launched to optimize appropriate concentration of IBA (0, 1, 2 and 3) mg l⁻¹ and NAA (0, 1, 2, 3, 4 and 5) mg l⁻¹ combinations for root induction of C86-12 and C86-56 genotypes in completely randomized design with 4x6x2 factorial treatment combinations arrangements. The analysis of variance showed that the interaction effects of concentrations of IBA and NAA combinations and genotypes were highly significant (p=0.001) for mean number of roots per shoot and mean root length. 1/2 MS medium supplemented with 2 mg l⁻¹ IBA+1 mg l⁻¹ NAA for C86-56 has gave best number of roots (14.88) but best root length (3.14 cm) was obtained on 1/2 MS+3 mg l⁻¹ IBA+4 mg l⁻¹ NAA. For C86-12 genotype 5 mg l⁻¹ NAA alone has gave best number of roots (17.8) and root length (3.2 cm). Out 100 Plantlets taken for acclimatization from best media of root induction, 87% for C86-12 and 93% for C86-56 were survived. Thus these media combinations are the best media for induction of roots after multiplication stage of micropropagation for these genotypes.

Key Word :

Sugarcane; Indole-3-Butyric Acid (IBA); ?-Naphthalene Acetic Acid (NAA); Root induction

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