

Sarut Thumjamras 2010: Identification of Sugarcane Somaclones Derived from Callus Culture by SSR and RAPD Markers and Cytogenetical Analysis. Master of Science (Economic Botany), Major Field: Economic Botany, Division of Science. Thesis Advisor: Associate Professor Siripatr Prammanee, Ph.D. 169 pages.

Sugarcane variety K84-200 was studied for somaclonal variation. Somaclones derived from callus culture. For callus induction, leaf and shoot explants were subjected to *in vitro* culture on MS medium supplemented with 3 mg/l 2,4-D for 5 times of subculture (15 weeks). Shoots were regenerated in MS medium without growth regulator. Molecular variations were detected by SSR marker, RAPD marker and SSR marker collaborate with RAPD marker. The result showed that the similarity coefficient and similarity matrix were in range of 0.80-1.00 and 0.6785-1.0000 for SSR marker, 0.65-1.00 and 0.4404-1.0000 for RAPD marker and 0.72-1.00 and 0.5625-1.0000 for SSR marker collaborate with RAPD marker, respectively. The phylogenetic tree can distinguish genetic group of sugarcane somaclone into 6 groups. In the group 5 and 6, all somaclones could be survived in 1.5% NaCl (w/v) medium which their genetics showed distinctly different from K84-200. The genetic difference of somaclones from sugarcane also clearly in cytological analysis. Sugarcane variety K84-200 contain the chromosome number of $2n=80$, 83, 100 and 108. The study found variation of chromosome number from $2n=53$ to $2n=146$ and also found structural aberrant. Chromosome deletion were found in some somaclones as 9S5M 38L5M 65L5N 17L5M(T) 59L5M(T) and 93L5M(T). Aneuploid were mostly found in this work. The most diverse number of chromosome was found in 2L5M somaclone which chromosome numbers were $2n=80$, 90, 100, 110, 116, 146. The mostly common chromosome numbers from 11 of 17 somaclones was $2n=80$. The chromosome set of $2n=80$ was frequently found in 77 cells from 193 cells. Result showed that molecular level detection and cytogenetical analysis were verifying the occurrence of somaclonal variation clearly.

Student's signature

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