Flow Cytometric Analysis of Intraplant Nuclear DNA Content Variation Induced by Sticky Chromosomes. (C01-rayburn120202-Poster)

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Abstract:

Sticky chromosomes have been reported as a consequence of genetic mutations or environmental effects on mitosis and meiosis of several plant species. Chromosome abnormalities resulting from sticky chromosomes include lagging chromosomes during anaphase, broken fragments and most notably, anaphase bridges. Sticky chromosomes are reported to result in an unequal distribution of genetic material in daughter cells. This unequal distribution is hypothesized to result in an increase in coefficient of variation (CV) of the G1 peak of dividing cells. The st1 mutant and a non mutant line in the same genetic background of maize were examined. A wheat line was grown in both low and high aluminum saturated soil. Both plant species were assessed for sticky chromosomes by mitotic analysis and flow cytometry. An increase in coefficient of variation (CV) of the G1/G0 peak was seen in both the maize mutant and wheat grown at high levels of saturation. This increase correlated with the number of abnormal anaphase cells observed. Flow cytometry was found to be sensitive enough to detect the intraplant nuclear DNA variation associated with sticky chromosomes within a plant

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