## Assessment of the Abatement of Pesticide Mutagenesis *in situ* by a Corn/Soybean Integrated Pest Management Programme

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The genotoxicity induced by pesticides applied in an IPM programme were evaluated with four plant bioassays. Three pesticide application rates were prescribed as follows: (a) Low - no field pesticide spray; (b) Medium - IPM test rate : banded cyanazine plus metolachlor (2.7 kg a.i. and 2.3 l a.i./ha of herbicides), respectively; and (c) High - preventive pesticide application programme: broadcast cyanazine plus metolachlor (same application rates as above) plus chlorpyrifos (1kg a.i./ha of insecticide). The Tradescantia micronucleus assay was employed for the assessment of (a) the formulated compounds; (b) pesticide residues extracted from soils sampled before and after application, and (c) in situ exposures (14 hr. exposure to pesticide - sprayed field). All pesticides showed clastogenic potency at doses below 50 ppm. Aqueous extracts of the two pesticide-sprayed soils were clastogenic, but the unsprayed soil extracts were not. Plants exposed in situ to pesticide-sprayed soils also showed significant increases in micronuclei frequency in relation to controls exposed to unsprayed soil. This genotoxic activity also induced increases in the mutation rate detected in situ by the Tradescantia stamen hair assay, the soybean leaf mosaicism assay, and the corn waxy pollen assay. The results indicate that replacing genotoxic compounds may be the only effective remediation measure to eliminate the risks imposed by mutagenic compounds in the agricultural environment.

## Key words: herbicides, insecticides, Tradescantia

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