

ENVIRONMENTAL POLLUTION AND GENETIC HAZARDOUS V. DIFFERENTIAL CYTOGENETIC DAMAGE INDUCED BY THE FUNGICIDE THIRAN AND EXTRACTrON OF SUGAR BEET SEED COAT

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ABSTRACT

Recently, the increasment of crop productivity under Egyptian conditions represents an important and strategic goal. at the national level. to face the great lack between production and consumption. In order to achieve such a goal, pesticides are widely used in Egypt as an essential component of the modern agriculture. On the other hand, one of the most critical current public health issues is contamination with pesticides. Therefore, it has become very important for the assessment of genotoxic effects which should be considered as an essential part of any genetic toxicology screening program for environmental pollution with pesticides. An attempt was done in September 2002 at Agricultural Research Station. Sabahia. Alexar"~-", Sugar Crops Research Institute, to detect the concentration of thiram in sugar beet seed coat and to disclose the capability of this fungicide to cause cytogenetic damages. In order to achieve such a purpose, thiram was extracted from sugar, beet seed coat and its concentrations were chemically detected employing gas chromatography assay. Root- tip cells were used as cytogenetic model to investigate the effect of fungicide upon the genome of 4 sugar beet varieties. The results obtained showed that mongerm varieties were highly affected compared with polygam ones. In addition, the cytogenetic • as well as , cellular effects obtained in this work were induced by the chemical of color used in sugar beet coat seed.

INTRODUCTION

The steadily growing world population and, consequently, the storage of food pose a continuous challenge to modern agriculture. All available resources have to be tapped. Besides the input of high-yielding varieties such as sugar beet, intensive application fertilizers together with proper irrigation and reclamaUon of new crop areas, plant protection with pesticides is of great importance, especially since annually about 35% of world crop are lost insect pests and plant disease. Though it is possible to exclude these losses with the input of suitable measures, an additional million of people would be fed adequately.

Recently, the increasment of crop productivity under Egyptian conditions represents an important and strategic goal at the national level to face the great lack between production and consumption. In order to achieve such a goal, pesticides are widely used in Egypt , as well as ,in many countries, as an essential component of the modern agriculture (Hassan and Soliman, 1998).