



Punjab farmers at risk of genotoxic damage

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Due to excessive use of pesticides, agriculture workers in Punjab are at a greater risk of genotoxic damage, which refers to the property of chemical agents that damages the genetic material within a cell causing mutations and lead to serious disorders such as cancer.

Punjab, an agrarian state, is the third-highest consumer of pesticides in the country.

A study by Guru Nanak Dev University, Amritsar, to assess chromosomal aberrations among agricultural workers exposed to pesticides and non-agricultural workers not exposed to pesticides suggests that chronic pesticide exposure leads to more abundant loss of chromosomes.

Blood samples of 296 individuals — 148 agriculture workers and 148 non-agriculture workers — were examined and a high frequency of aberrations was found in peripheral blood lymphocytes of exposed subjects as compared with non-exposed ones. The agriculture workers included in the study had an average exposure history of 25 years while half of them reported previous exposure to pesticides within the last 15 days. Throughout their occupational activity, 70% of them never used personal protective equipment (PPE) while handling pesticides. Over 93% of the agriculture workers exposed to pesticides were found to be exhibiting a higher burden of chromosomal aberrations with a higher value of aneuploidy. Over 26% of the exposed participants reported the occurrence of acute health issues during the handling of pesticides. A significantly high presence of abnormal metaphases (15.47 ± 0.81) was found in participants exposed to pesticides as compared to non-exposed subjects (3.70 ± 0.33).

To minimize the exposure and possible health outcomes in individuals coming in direct or indirect contact with pesticides, stress has been laid on strict measures for safe disposal and handling of these dangerous chemicals.

As in the current Covid19 pandemic scenario, people are aware of the benefits of PPE kits, it has been recommended to make it mandatory for farmworkers to wear PPE while handling pesticides.

The study, conducted by Anupam Kaur and Meenakshi Ahluwalia of the Department of Human Genetics, GNDU, emphasised promoting the use of alternative farming such as organic farming and the use of biological pesticides should for pest management.

“The essential oils are composed of aromatic hydrocarbons and are plants secondary metabolites that provide insecticidal, nematocidal, fungicidal, ovicidal, and bactericidal effects. They can be used as an alternative to chemical pesticides and must be encouraged as a method for pest management,” said Anupam Kaur.