

## Pesticide: are these Beneficial or Harmful?

<sup>1</sup>Akanand, <sup>2</sup>Shivi Yadav and <sup>3</sup>Vignesh Selvam

<sup>1</sup>PhD Scholar, Depart of Entomology, Indira Gandhi Krishi Vishwavidyalaya, Raipur Chhattisgarh

<sup>2</sup>PhD Scholar, Depart of Entomology, Indira Gandhi Krishi Vishwavidyalaya, Raipur Chhattisgarh

<sup>3</sup>M.Sc. Molecular Biology and Biotechnology, Department of Biotechnology, Center for Plant Molecular Biology and Biotechnology, TAU, Coimbatore, TN. India

ARTICLE ID: 36

### Abstract:

In today's agriculture, pesticides are necessary for both crop yield and insect management. But there has been a lot of discussion about how they affect the environment and public health. The advantages and disadvantages of pesticide use are discussed in this article, along with how they affect the environment, human health, and sustainable agricultural methods. The report also addresses other approaches to pest management, highlighting the necessity of a sustainable and well-rounded strategy.

### Introduction:

A chemical or biological substance, such as a bacteria, virus, antibiotic, or disinfectant, that discourages, neutralizes, or eliminates pests is generally referred to as a pesticide. Because of how frequently pesticides are used, the terms "pesticide" and "plant protection product" are frequently used interchangeably. Because they provide an efficient way to manage pests and raise crop yields, pesticides have emerged as a key component of modern agriculture. But worries regarding their safety and environmental impact have arisen because of their widespread use. In addition to examining potential alternatives for sustainable pest management, this article seeks to present a thorough analysis of the advantages and disadvantages of using pesticides.

### Beneficial Effect:

The use of pesticides is essential to shielding crops from illnesses and pests. By lowering crop losses, they assist farmers in maintaining high yields and ensuring food security. Among the main advantages of pesticides are:

**Crop Protection:** Pesticides increase agricultural output by shielding crops from a variety of pests and diseases.



**Food Security:** Pesticides contribute to a steady food supply, which is necessary to support the world's expanding population, by reducing crop losses.

**Disease Prevention:** By controlling pests that transmit diseases to people and animals, pesticides indirectly improve public health.

### **Controversies and Risks**

The environment and human health are seriously endangered by pesticides, even with their many benefits. Some of the main issues are as follows:

- **Health Risks:** There are substances in many insecticides that may be harmful to people. Prolonged exposure can cause major health concerns such as endocrine disruption, cancer, and reproductive disorders.
- **Environmental Contamination:** Pesticides have the potential to contaminate water and soil, which can have a negative impact on ecosystems and species. Exposure to pesticides can affect non-target species, especially helpful insects like bees.
- **Biodiversity Loss:** Pesticide use has the potential to decrease biodiversity by harming a variety of creatures, such as aquatic life, plants, and insects. Ecosystems may be harmed by this and the ecological equilibrium upset.

### **Environmental Impact:**

The ecosystem can be significantly impacted by pesticides. They impact non-target species in addition to eliminating pests. The most important effect is the decrease in bee populations, which is crucial for pollination. Furthermore, pesticide runoff can contaminate water, which is bad for aquatic habitats. Pesticide residues have the potential to deteriorate soil quality and eventually lower its fertility, which can potentially jeopardize soil health.

### **Human Health Concerns:**

Pesticide residues on food can provide serious health hazards, according to research. The human body can accumulate even tiny levels of exposure, which can result in long-term health issues. Pregnant women and children are among the most vulnerable demographics. The following health issues are linked to pesticide exposure:

- **Chronic Health Issues:** Chronic illnesses such as cancer and neurological abnormalities can arise from prolonged exposure to pesticides.
- **Developmental Effects:** Children's health and development may be permanently impacted by pesticide exposure throughout key developmental stages.



- **Acute Poisoning:** Pesticides can produce acute poisoning in high exposure situations, which can result in immediate health consequences such as nausea, vertigo, and respiratory problems.
- **Alternatives to Pesticides:** Alternative approaches to pest control are being developed and put into practice in an effort to lessen the detrimental effects of pesticides. These substitutes are designed to reduce dangers to human health and the environment while effectively managing pests. Important substitutes consist of:
  - **Integrated Pest Management (IPM):** This method of controlling pests integrates mechanical, cultural, and biological techniques. IPM lessens dependency on chemical pesticides by promoting the use of natural pest management techniques.
  - **Organic Farming:** In organic farming, natural pest management techniques like crop rotation, biological control, and the utilization of natural predators are used instead of synthetic pesticides.
  - **Biological Control:** In order to manage pest populations, this strategy makes use of diseases, parasites, or natural predators. Biological control is sustainable and kind to the environment.

#### **Conclusion:**

Although pesticides are essential to contemporary agriculture, it is impossible to overlook the risks they pose to the environment and public health. To guarantee a safer future for agriculture, it is crucial to strike a balance between the use of pesticides and sustainable techniques. We can lessen the harmful effects of pesticides and advance a more sustainable agricultural system by implementing alternative pest control techniques including integrated pest management (IPM), organic farming, and biological control. This study emphasizes how crucial it is to weigh the advantages and disadvantages of using pesticides. In order to safeguard agricultural output over the long run, maintain environmental sustainability, and protect human health, a balanced approach incorporating sustainable practices and alternative pest management approaches is required.