

# Detection of Pesticide Residues in Cereals: A Focus on Rice, Wheat, and Maize

Dr. Sajid F. Shaikh<sup>1</sup>, Nida M. Gorme<sup>2</sup>, Maurya Shivam Badelal<sup>3</sup>, Balak Sadiya<sup>4</sup>

Anjuman Islam Janjira Degree College of Science Murud, Murud-Janjira, Raigad, Maharashtra, India

**Abstract:** Pesticide residues in cereals pose significant health risks due to their potential toxicity and long-term environmental persistence. Excessive or improper pesticide use in agriculture can lead to contamination of staple grains such as rice (*Oryza sativa*), wheat (*Triticum aestivum*), and maize (*Zea mays*), raising concerns about food safety and regulatory compliance. This study aims to detect and quantify pesticide residues in these cereals using advanced analytical techniques.

Samples were collected from various agricultural regions and analyzed using gas chromatography-mass spectrometry (GC-MS) and liquid chromatography-mass spectrometry (LC-MS). The pesticide residue levels were compared against the maximum residue limits (MRLs) set by the Food and Agriculture Organization (FAO) and the World Health Organization (WHO). Preliminary findings indicate that organophosphates, pyrethroids, and neonicotinoids were among the most commonly detected pesticide residues. Rice exhibited higher pesticide accumulation compared to wheat and maize, likely due to its water-intensive cultivation process.

The study underscores the need for stringent monitoring and sustainable farming practices to minimize pesticide contamination in cereals. Future research will explore bioremediation techniques and the potential of organic farming to reduce pesticide residue levels. The findings provide valuable insights for policymakers, food safety authorities, and consumers in ensuring a safer food supply...

**Keywords:** Pesticide Residues, Cereals, Rice, Wheat, Maize, Food Safety

