Special Issue

Agronomic Strategies for Managing Insecticide Resistance in Crop Pests

Message from the Guest Editors

Insecticide resistance in crop pests poses a significant threat to global food security and sustainable agriculture. Understanding the molecular mechanisms driving resistance, such as mutations in target-site genes, the overexpression of detoxification enzymes including cytochrome P450s, and alterations in insect signaling pathways, is critical for developing effective management strategies. Recent advances in genomics, transcriptomics, and proteomics have provided powerful tools to elucidate these mechanisms at unprecedented resolution. This Special Issue will bring together cutting-edge research and comprehensive reviews that bridge molecular biology with practical agronomy. Particular emphasis will be placed on agronomic strategies, including crop rotation, refuge design, host plant resistance, optimized pesticide application schemes, integration of biological control, and landscape-level practices. At the same time, studies on the genetic and biochemical bases of resistance, novel molecular targets, and resistance monitoring methods are also welcome, especially when they inform or support these agronomic approaches.

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