

Molecular Mechanisms of Fungicide Resistance in Plant Pathogenic Fungi

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Fungal pathogens pose a significant threat to global food security by causing severe plant diseases. Fungicides play a crucial role in disease management. However, resistance among fungal pathogens is increasingly being reported. This presentation will explore the management of fungal diseases caused by *Botrytis cinerea*, *Claviceps jacksonii*, and *Fusarium virguliforme* using different classes of fungicides. Additionally, the emergence of fungicide resistance and its molecular mechanisms will be discussed. Many phytopathogenic fungi have developed resistance to site-specific fungicides, including benzimidazoles, dicarboximides, demethylation inhibitors (DMIs), and succinate dehydrogenase inhibitors (SDHIs). Resistance is commonly linked to mutation(s) in fungicide target gene(s), and some fungal populations exhibit multiple-fungicide resistance due to mutations in more than one target gene. Furthermore, multidrug resistance has been identified in *B. cinerea* and *Claviceps* species, where overexpression of ATP-binding cassette (ABC) transporters leads to reduced sensitivity to chemically unrelated fungicides. Mutation(s) in fungal-specific transcription factor have been shown to drive this overexpression. This presentation will highlight recent insights into the molecular mechanisms underlying site-specific fungicide resistance, multiple-fungicide resistance, and multidrug resistance in plant pathogenic fungi.