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INTERNATIONAL CONFERENCE
on
CROPS – CLIMATE RESILIENCE OPTIMIZATION FOR PRODUCTIVITY AND SUSTAINABILITY

9th - 11th December 2025

(Hybrid Mode)

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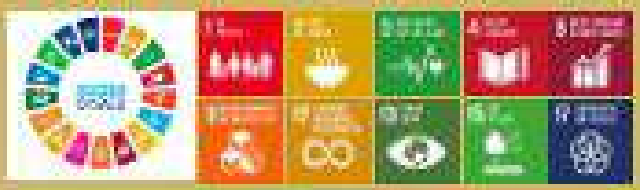

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COMPENDIUM OF ABSTRACTS

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Integrated Management Of Soil-Borne Plant Pathogens: Addressing Climate-Induced Shifts In Soil Microbial Communities

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ABSTRACT

Climate change is profoundly altering soil ecosystems, reshaping microbial community structure and function with significant consequences for the incidence and severity of soil-borne plant diseases. Rising temperatures, altered precipitation patterns, and increased frequency of extreme weather events influence pathogen survival, dispersal, and virulence, while simultaneously affecting beneficial soil microorganisms that contribute to natural disease suppression. These climate-induced shifts challenge conventional disease management strategies and necessitate integrated, adaptive approaches.

This paper explores integrated management of soil-borne plant pathogens through the combined use of cultural practices, host resistance, biological control agents, soil amendments, and precision-based interventions. Emphasis is placed on how climate-driven changes in soil microbial diversity and interactions can be leveraged to enhance suppressive soils and improve plant resilience. The role of microbiome-informed management, including microbial consortia and organic inputs, is highlighted as a sustainable strategy to mitigate pathogen pressure under changing environmental conditions. By aligning soil health management with climate-smart agricultural practices, integrated approaches offer a resilient pathway to manage soil-borne diseases while maintaining productivity and ecosystem stability in a warming world.

Keywords:
Soil-borne pathogens; Climate change; Soil microbial communities; Integrated disease management; Soil health

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