Highlights and Synopsis

ISSCT Pathology Section Webinar
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Screenshot of webinar

Highlights

The webinar highlighted the increasing emergence of complex and evolving disease threats in global sugarcane production systems. Across different regions, presenters documented how previously minor or unrecognized pathogens are now causing significant economic losses, often in association with other organisms or environmental stressors.

In India, *Fusarium sacchari* has shifted from a minor pathogen to a major cause of Fusarium wilt, with yield losses reaching up to 90%, particularly in ratoon crops. Disease severity increases when combined with red rot or during stress conditions, indicating changing host–pathogen interactions and the urgent need for resistant varieties. Similarly, Australia is reporting rising incidences of poor germination, stunting, and crop death linked to *Fusarium* spp., with evidence suggesting a potential disease complex influenced by varietal susceptibility and environmental conditions.

Emerging disease syndromes were also highlighted. In Jamaica, a previously unrecognized condition characterized by leaf yellowing, shortened internodes, and stalk death is suspected to be a new disease with an unknown causal agent, emphasizing the importance of rapid diagnostics and surveillance. In Brazil, sugarcane wilt syndrome was identified as a complex disease involving *Colletotrichum falcatum* as the primary pathogen and *Pleocyta sacchari* as a secondary contributor, demonstrating how multi-pathogen interactions complicate diagnosis and management.

Collectively, these studies underscore a global trend toward more complex, emerging disease systems, requiring integrated management, molecular diagnostics, and proactive industry preparedness.

Synopsis

On Tuesday 2nd June 2026, the ISSCT Pathology Section hosted a webinar on '***Emerging Diseases of Sugarcane***', bringing together leading global experts to examine emerging diseases of sugarcane with a strong focus on how climate variability and changing production systems are reshaping disease dynamics worldwide.

The webinar featured four presentations from Dr Rassappa Viswanathan (former Director of ICAR-Sugarcane Research Institute, India), Dr Philippe Rott (CIRAD, Montpellier, France), Dr Mariana Cicarelli Cia (CTC, Brazil), and Dr Shamsul Bhuiyan (SRA, Australia).

Across all regions, a key message emerged from the presentations and subsequent panel discussions: diseases previously regarded as minor or unknown are now becoming major production constraints, posing a serious risk to global sugarcane industries.

The topics discussed were:

1. Fusarium Wilt and its Link with Pokkah Boeng - Dr R. Viswanathan described how *Fusarium sacchari* has evolved from a minor to a major pathogen in Indian sugarcane systems. Fusarium wilt can cause up to 90% yield losses, particularly in the ratoon crop. It intensifies when combined with red rot infection or during stress conditions. A traditionally localized pathogen is now becoming a major issue, indicating a shift in pathogen behaviour and host-pathogen interactions. Current research efforts focus on understanding the epidemiology of this emerging disease and developing integrated management strategies. Particular emphasis at this stage is being placed on developing resistant varieties to mitigate future impacts.

2. Leaf Yellowing and Internode Stunt – A New Disease? Dr Philippe Rott reported on the occurrence of a potential new sugarcane disease in Jamaica during October to November 2023, that was associated with significant production losses. Symptoms included yellow-orange leaf discoloration, reduced internode length, side-shoot proliferation, reduced stalk diameter, and stalk death and mummification. Based on the current observations, it appears to be a new disease of sugarcane, with an unknown causal agent. This case highlights the emergence of new disease syndromes with potentially severe economic consequences. Investigations are ongoing, including molecular diagnosis to identify the likely biotic causal agent(s).

3. Sugarcane Wilt Syndrome in Brazil – Dr. Mariana Cia described a new disease phenomenon, involving stalk mortality and internal rot, that has been observed in commercial crops in Brazil. The disease, identified as sugarcane wilt syndrome, was found to be primarily associated with *Colletotrichum falcatum*, while *Pleocyta sacchari* was identified as a secondary associated organism. The integration of classical pathology and molecular diagnostics was instrumental in identifying the causal agents. A key message from this talk was the increasing occurrence of disease complexes involving primary pathogens and opportunistic organisms, which are making disease diagnosis and management more challenging.

4. Fusarium Wilt in Australia – An Emerging Risk? – Dr. Shamsul Bhuiyan presented recent findings from the Australian sugar cane industry, where increasing incidences of germination failure, stunting, and plant death have been observed. A strong association with *Fusarium* spp.

(especially *F. sacchari)* has been observed. Disease incidence and severity appeared to vary among varieties and were influenced by prevailing environmental conditions. Additional fungi were also identified, suggesting a complex disease system. Ongoing research aims to identify causal agent(s), assess industry risk, and develop management strategies. Preliminary findings indicate a potential emerging disease complex, highlighting the need for continued investigation and proactive industry preparedness.

Panel Discussion

The presentations were followed by a panel, during which several themes were identified:

a) Climate Change: Changing climate conditions including rising temperatures, erratic rainfall, prolonged drought, and wet cycles are reshaping disease dynamics in sugarcane. These conditions increase pathogen survival, enhance disease expression, and expand pathogen geographic ranges.

b) Emergence of Previously Minor Diseases: Pathogens once considered secondary are now major threats. Examples include *Fusarium sacchari* and various soilborne disease complexes. This trend indicates shifts in the host-pathogen-environment relationship.

c) Increasing Importance of Disease Complexes: Multiple pathogens acting together (e.g., primary/minor or opportunistic organisms) could complicate diagnosis. It requires an integrated approach that combines molecular, field epidemiology, and agronomic observations to better understand the underlying causes.

d) Rising Threat of Soilborne Diseases: Soilborne pathogens such as *Fusarium* wilt and red rot are becoming more widespread and more impactful, leading to major consequences such as poor crop establishment, reduced yield, and reduced ratoon ability.

A key consensus emerged that sugar cane disease scenarios are changing globally due to climate pressures. Participants expressed strong concern about the rapid emergence and escalation of new disease threats and the need for global collaboration. The panel recommended greater efforts to collect and integrate data worldwide and link the datasets with climate data for predictive analysis. Suggestions were made to compile global datasets ahead of the ISSCT Pathology Workshop (Réunion, 2027) and to improve preparedness through shared surveillance, knowledge sharing, and collaborative research.

The webinar clearly showed that emerging sugarcane diseases are no longer isolated events but part of a global trend driven by environmental change and evolving pathogen dynamics. A coordinated international effort—combining research, surveillance, and industry engagement—is essential to safeguard the future of sugarcane production.