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Wilt of Sugarcane: Wilt and Its Integrated Management

Dr. Meghaa Sharma[1] and *A. Rahul Reddy[2]
[1]Assistant Professor, Faculty of Agriculture, Jagannath University, Jaipur, India
[2]Student, B.Sc. (Hons.) Agriculture, Jagannath University, Jaipur, India
*Corresponding Author's email: rahulreddy630487@gmail.com

Sugarcane is an important commercial crop widely cultivated for sugar and related products. However, its productivity is greatly affected by several diseases, among which wilt is one of the most destructive. Wilt of sugarcane is primarily a soil- and sett-borne disease caused by fungal pathogens, especially Fusarium species. It leads to drying, stunted growth, and eventual death of the plants, causing significant yield losses.The disease becomes more severe under unfavorable conditions such as poor drainage, continuous cropping, and the use of infected planting material.

Causes of wilt sugar cane

Causal Organism

The main causal organism is the fungus *Fusarium sacchari*.

Other associated fungi may include:

- *Colletotrichum falcatum*
- *Cephalosporium sacchari*

These fungi infect the vascular tissues (xylem), blocking water transport and causing wilting.

Disease Cycle

The disease cycle of wilt of sugarcane (commonly caused by fungi like Fusarium species, especially *Fusarium sacchari*) explains how the pathogen survives, spreads, infects, and reproduces in the crop.

The fungus survives in Infected crop residues left in the field Soil (as chlamydospores or resting spores) Infected seed setts (planting material)

Environmental Factors Favoring Disease

Environmental factors play a major role in the development and spread of plant diseases. These factors influence the survival of pathogens, the susceptibility of the host plant, and the interaction between them. The most important environmental conditions that favor disease development. Each pathogen has an optimum temperature for growth.Warm temperatures (20–30°C) often favor fungal and bacterial diseases.High humidity and free water (rain, dew, irrigation) are critical for many pathogens. Leaf wetness duration increases infection chances.Fungi such as downy mildew and late blight thrive in moist conditions.

Symptoms and Diagnosis

Pneumonia is a lung infection that can range from mild to severe and typically presents with symptoms such as persistent cough (often producing phlegm), fever, chills, shortness of breath, chest pain that worsens with breathing or coughing, fatigue, and sometimes nausea or confusion (especially in older adults). The condition may be caused by bacteria, viruses, or fungi, with Streptococcus pneumoniae being a common bacterial cause. Diagnosis usually involves a combination of clinical evaluation and medical tests: doctors listen to the lungs for abnormal sounds, assess symptoms and medical history, and confirm findings using imaging like a chest X-ray or CT scan. Laboratory tests such as blood tests, sputum culture, and

sometimes pulse oximetry are also used to determine the severity and identify the causative organism, helping guide appropriate treatment.

Prevention and Management Strategies

Host Resistance

Host resistance is the ability of a plant (host) to prevent, reduce, or tolerate infection and damage caused by pathogens (such as fungi, bacteria, viruses) or pests.Types of Host Resistance: Genetic Resistance. Controlled by genes present in the plant.Vertical (Specific) **Resistance:** Effective against specific races of a pathogen; often controlled by one or few genes. Horizontal (General) Resistance: Effective against many strains; controlled by multiple genes and more durable. Morphological Resistance Structural features that prevent infection.

Chemical Control

Chemical control alone is not very effective against wilt diseases because the pathogens are usually soil-borne fungi (like Fusarium spp.) that survive inside plant tissues and soil. However, certain chemical measures can help reduce infection when used along with other practices Treat seed setts before planting with fungicides: Carbendazim 0.1% (1 g/L water) for 10–15 minutes Or Thiophanate-methyl 0.1%

This helps eliminate fungal spores present on planting material. Hot water + chemical treatment Dip setts in hot water at 50°C for 30 minutes, then treat with fungicide (e.g., Carbendazim).

This improves effectiveness against internal infection.Seed treatment with systemic fungicides such as carbendazim or captan is practiced to reduce seedborne inoculum and protect the young seedlings during the early growth stages [4].

Cultural and Agronomic Practices

Cultural practices refer to routine farm operations that create a favorable environment for crop growth and reduce pest and disease problems.

Key Cultural Practices: Crop Rotation Growing different crops in sequence to break pest and disease cycles and improve soil fertility. Intercropping / Mixed Cropping

Growing two or more crops together to reduce pest spread and make better use of nutrients. Field Sanitation Removing plant debris, weeds, and infected plants to prevent disease buildup. Time of Sowing

Biological Control

Wilt of sugarcane is a serious disease mainly caused by soil-borne fungi such as Fusarium sacchari. Biological control is an eco-friendly and sustainable method that uses beneficial microorganisms to suppress or control the pathogen.

Concept of Biological Control: Biological control involves the use of living organisms (bio-agents) to reduce the population or activity of plant pathogens. These beneficial microbes protect the crop by competing with, inhibiting, or directly attacking the disease-causing organism.

References

1. Rajpurkar et al., Radiologist-Level Pneumonia Detection on Chest X-rays (CheXNet) (2017)
2. Transfer Learning-Based Pneumonia Detection using CNN models (2020)
3. Ensemble Deep Learning Model for Pneumonia Detection (2021)
4. CNN-based Pneumonia Detection with Model Comparison (2020)
5. Compound Scaled Deep Learning Model for Pneumonia Detection (2021)
6. VGG-16 Based Pneumonia Detection Model (2023)