
INTEGRATED DISEASE MANAGEMENT IN SUGARCANE

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INTRODUCTION

Sugarcane is widely cultivated in tropical to sub-tropical regions. Scientifically, it is called by the names *Saccharum officinarum* (Noble cane – Due to high sugar content and splendid appearance) & *Saccharum barberi*. The former is been grown in southern regions whereas the latter is been grown in northern regions. It comes under the family *Poaceae* and require 1500 mm of water annually for its growth and development. The ideal temperature for growth and development of the crop is 21-27°C. According to 2018 report, India ranks 2nd in the world production followed by Brazil. In India Uttar Pradesh is the leading producer producing 136 million tonnes / annum with total area of 22.8 lakh hectares.

IMPORTANT DISEASES OF SUGARCANE

Important fungal diseases which cause economical losses are red rot which is caused by the fungi *Colletotrichum falcatum* and Wilt which is caused by *Fusarium sacchari*. And the important bacterial disease is Ratoon stunting which is caused by xylem inhabiting gram positive fastidious vascular bacteria – *Leifsonia xyli* ssp. *xyli*.

MAJOR FUNGAL DISEASES

Major fungal diseases are red rot and Wilt. The former is caused by the pathogen *Colletotrichum falcatum* and the latter is

caused by the pathogen *Fusarium sacchari*. Red rot affected canes show a decline up to 80% in cane weight and up to 90% reduction in juice extraction. Wilt disease cause yield loss of crop up to 25%.

The symptoms of red rot affected cane shows reddening in the internal cavity of canes and reddening of midrib in leaves and the wilt affected cane shows the symptom of boat like cavity in the affected canes. To control these diseases, only one method of control is not effective. So, integration of all the disease control measures is advisable for the management of these fungal diseases.

INTEGRATED DISEASE MANAGEMENT OF FUNGAL DISEASES

The Cultural method of controlling includes selection of setts from disease free area and growing of resistant cultivars. The Physical method includes the removal of affected clumps to avoid the spread of pathogen from diseased plants to healthy ones. The Chemical method of controlling is treating the setts before planting with carbendazim (Bavistin) 50% WP along with 2.5 kg urea in 250 litres of water to eliminate the fungal spores. The Biological method include the treatment of setts with the fungal bio control agent *Trichoderma harzianum* at the rate of 10g/kg of setts.

Bacterial disease

The important bacterial disease is the ratoon stunting which is caused by the xylem inhabiting gram positive fastidious vascular bacteria *Leifsonia xyli* ssp. *Xyli*. The notable symptom is orange pin head like formation inside the infected setts. It cause yield loss up to 30% worldwide. For the management of this disease integrating all the management strategies is advisable.

INTEGRATED DISEASE MANAGEMENT OF BACTERIAL DISEASE

The cultural method of controlling is selecting healthy setts for planting. The Physical method of controlling is removing the affected plants from the field. The mechanical method involves treating the setts with hot water at 50°C for 2 hours.

CONCLUSION

For controlling the plant diseases, only adapting one or two methods won't be effective. So, IDM (Integrated disease management), *i.e.*, adapting all the disease Control measures is effective for the controlling of the diseases.