



Research Article

Influence of climatic parameters and management strategies on sugarcane smut disease

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Abstract : The present investigation was conducted to study the influence of climatic parameters and management strategies on sugarcane smut disease. *Culmicolus smut (Sporisorium scitamineum* Meike), the sett borne pathogen causes considerable loss to sugarcane productivity. Due to high intensity of temperature, sett and soil borne teliospore heavily infect sugarcane bud. Also, due to high rainfall, smut spores were whipped off and its survival declined. Further as a management strategy the sett and soil borne smut pathogen was significantly reduced by sett treated with triademifon (0.1%), had shown radical reduction in smut incidence (6.9 %) followed by propiconazole (8.2%) as against control (30.8%). The toxicant entered into the host plant through its systemic action and subsequently penetrates the pathogen in sufficient quantity. In turn, it was inhibited the entry of *S. scitamineum* in the sugarcane buds and further controls the establishment of the disease. The sett treatment with systemic fungicide, triademifon (0.1%) was found to be the best in terms of controlling the smut disease and leads to getting higher yield, quality and sugar yield, respectively of, 108.8 t/ha, 13.1 per cent and 14.1 followed by *T. harzianum* (0.4%) 106.4 t/ha, 12.5 per cent and 13.7 as against control which recorded, respectively, 69.0 t/ha, 10.8 per cent and 7.2.

Key Words : Weather factors, Smut, Fungicide, Biocontrol

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INTRODUCTION

In India, sugarcane has become a crop of commercial importance and grown in all the states of India except the hilly regions. Currently, it is cultivated in an area of 5.15 million ha with an average productivity of 69 t/ha with the total production of 355.4 million tonnes of sugarcane and 28.3 million tonnes of sugar. In Tamil Nadu, it is cultivated in an area of 3.35 lakh ha with an average productivity of 105 t/ha accounting the total production of 357.07 lakh tonnes of

sugarcane and 25.40 lakh tonnes of sugar. Of the total area cultivated, 52.70 per cent is planted and 47.30 per cent is under ratoon.

Sugarcane smut (*Sporisorium scitamineum*), (Piepenbring *et al.*, 2002) the sett borne pathogen causes considerable loss to sugarcane productivity (Rott *et al.*, 2000). Smut established quickly and remaining the most economically important fungal disease of the crop. Yield losses may be 39-56 per cent in planted crop and 52-73 per cent in ratoon crop (Briceno *et al.*, 2005; Braithwaite *et al.*, 2008). The smut is prevalent in all sugarcane growing countries of the world.

Weather plays an important role in crop growth as well as development of smut disease. The high temperature in the sugarcane growing area of Zimbabwe and conducive to the development of the smut and the disease is endemic (Zvoutete, 2008). Although, controlling of the smut disease with fungicides have been found to be ineffective (Agnihotri and Sinha, 1996; Wada *et al.*, 1999; Vijaya, 2000) due to the

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