

**STUDY THE EFFECTS OF PLANT EXTRACTS  
AND SOIL MICRO-ORGANISMS ON SUGARCANE  
SMUT PATHOGEN (*Ustilago scitaminea*)**

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## ABSTRACT

Sugarcane Smut disease (*Ustilago scitaminea*) is one of the major sugarcane diseases in Sri Lanka that results serious yield losses in sugarcane cultivation. This disease is disseminated either through the use of infected seed material or windblown spores. Biological control by an antagonism is promising, non-chemical and green approach for managing plant diseases. Fungicides adversely distress the environment and non-targeted organisms including the humans. The sustainable crop production through eco-friendly disease management is required in recent scenarios due to the side-effects of chemical fungicides. Therefore, twenty five plant species, twenty eight bacteria isolates and thirty fungi isolates were evaluated *in vitro* against smut pathogen (*Ustilago scitaminea*). Out of twenty five plant species, leaf extracts of *Lantana camara* L. (51.515%), *Cinnamomum* spp. (77.580 %), *Tagetes erecta* L. (43.2498%), *Zinger officinale* Roscoe (69.725 %), *Kaempferia* spp. (69.048 %) and bacterial pure culture of UWUL 100 (43.5265 %), UWUP 200 (72.549 %), UWUP 211 (60.3088 %), UWUP 212 (61.11 %) (bio-agent) from twenty eight bacterial isolates and out of thirty fungal isolates, pure culture of UWUL 203, UWUL 208 (bio-agent) inhibited the mycelia growth and teliospore germination of *U. scitaminea*. With fungicide combination of plant extracts, 20 % of each *Lantana camara* L., *Tagetes erecta* L. and *Zinger officinale* Roscoe, 30 % of each *Cinnamomum* spp. and *Kaempferia* spp. extract combinations are effective, economically viable and environmental friendly to control sugarcane smut

**Key Words:** *Ustilago scitaminea*, Sugarcane, Fungicide, Plant extracts, Bacterial isolates, fungal isolates.