

Morphological and Growth Variations of *Sporisorium scitamineum* and *Fusarium* spp. Co-existing in Smut-infected Sugarcane Varieties Grown in Hingurana, Sri Lanka

Tharangani H. D. A., Thushari A. N. W. S.¹ and De Costa D. M.*

Department of Agricultural Biology,
Faculty of Agriculture, University of Peradeniya, Peradeniya

Sugarcane smut disease, caused by *Sporisorium scitamineum* affects the cane yield significantly. In addition, *Fusarium* spp. have been reported to cause pokkah boeng, stalk wilt and stalk rot of sugarcane. This study was conducted to identify possible co-existence of *Fusarium* spp. in smut-infected sugarcane and to determine the morphological and growth variations of the *S. scitamineum* and *Fusarium* spp. Whips were collected from plant crop and ratoon crop of 11 sugarcane varieties from four locations in Hingurana. Macroconidia of *Fusarium* spp. present per unit ocular area were quantified. Spores from the whips were cultured on *S. scitamineum* specific media and PDA to isolate *S. scitamineum* and *Fusarium* spp., respectively. Colony morphology and shape and dimensions of the teliospores and macroconidia of the two types of fungi were recorded. Percentage germination of macroconidia in the presence of teliospores was quantified *in vitro*. Sensitivity of smut fungus and *Fusarium* spp. to Tebuconazole recommended for smut control was determined *in vitro*. Selected isolates of *Fusarium* and *S. scitamineum* were identified by molecular methods. In contrast to *Fusarium* isolates, colonies of *S. scitamineum* did not show a colour variation. Colony growth rate (CGR) of *S. scitamineum* varied significantly ($P < 0.05$) among sugarcane varieties and location of collection. Spore dimensions of the smut pathogen and CGR, macroconidia count and germination percentage of *Fusarium* varied significantly ($P < 0.05$) by the interaction effect of variety \times location. The two-way interactions among variety, location and crop type were significantly ($P < 0.05$) different with respect to spore dimensions of *Fusarium* spp.. Both types of fungi were completely inhibited by Tebuconazole. Co-existence of *Fusarium sacchari* in smut-infected plants and their ability to inhibit the growth of the smut pathogen was identified. The findings revealed the morphological and growth variations and interaction effects between *S. scitamineum* and *Fusarium* spp. co-existing in smut-infected sugarcane.

Keywords: Spore dimension, Fungicide sensitivity, *Fusarium sacchari*, Morphological variation, Growth variation

¹Division of Crop Protection, Sugarcane Research Institute, Uda-Walawe

* devikadecosta@gmail.com