ISOLATION AND CONFIRMATION OF LOCALLY AVAILABLE ANTAGONISTIC MICROORGANISMS AGAINST *Colletotrichum musae* (BERK AND CURT)

H.R.G. Tharaka[1], T.D.C. Priyadarshani[1], D.M.D. Dissanayake[1], G.D.N. Menike[2], K.M.A.N. Alles[1]

[1]*Department of Plant Sciences, Faculty of Agriculture, Rajarata University of Sri Lanka, Anuradhapura, Sri Lanka.*
[2]*National Institute of Post-Harvest Management, Anuradhapura, Sri Lanka.*

Banana is highly susceptible to fungal diseases specially for anthracnose disease caused by *Collectotrichum musae*. Fungicides used to control this disease cause negative impacts on human health and the environment. Hence, there is a necessity for an environmental friendly measure to control this pathogen effectively. In this study, *C. musae* was identified and confirmed using microscopic and macroscopic features followed by molecular confirmation using polymerace chain reaction with universal primers and subsequent homology search. Inhibition percentage of *C. musae* in two banana cultivars, *Kolikuttu* and Cavendish, was tested with *Aspergillus flavus, Aspergillus niger*, *Penicillium italicum* and *Trichoderma virens.* The highest ($p<0.05$) inhibition percentage was reported by *A. flavus* (83.03 %) followed by *A. niger* (79.46%), *T. virens* (74.07%), and *P. italicum* (15.17%). In order to prevent health related issues, *T. virens* was selected for further studies. *In vivo* studies were conducted with four different concentrations of *T. virens* spore suspensions: 0, 1 x 10^5, 1 x 10^6, 1 x 10^7 spores ml^{-1}. The artificially wounded banana fruits treated with each concentration of *T. virens* were then treated with *C. musae* (1 x 10^6 spore ml^{-1}) after 30 minutes. The disease development was successfully reduced in *Kolikuttu*, which were treated with 1 x 10^7 spore ml^{-1} of *T. virens*as 0% on 5^{th} day, 2.08% on 6^{th} day and 14.35% on 7^{th} day compared to the control. In Cavendish, there was a significant disease inhibition in fruits treated with 1 x 10^7 spore ml^{-1} of *T. virens* compared to the control. However, the inhibition was lower in Cavendish than that of *Kolikuttu*. The tested *T. virens* has the potential to use as a biological control to mitigate the devastating disease, banana anthracnose.

Keywords: Anthracnose, Banana, *Kolikuttu*, *Trichoderma virens*