

SEAWEEDS EXTRACT TO CONTROL BANANA ANTHRACNOSE CAUSED BY *Colletotrichum musae*: AN *IN-VITRO* AND *IN-VIVO* STUDY

M.R.S.W. Swarnathilake¹, W.M.R.S.K. Warnasooriya¹,
T. D.C. Priyadarshani¹, I. Wijesekara² and G.D.N. Manike³

¹Department of Plant Sciences, Faculty of Agriculture, Rajarata University of Sri Lanka, Anuradhapura, Sri Lanka.

²Department of Food Science and Technology, Faculty of Applied Sciences, University of Sri Jayewardenepura, Nugegoda, Sri Lanka.

³Research Division, National Institute of Postharvest Management, Anuradhapura, Sri Lanka.

Banana anthracnose is a postharvest disease caused by *Colletotrichum musae*. Currently, synthetic fungicides are used to control anthracnose, causing harmful impacts on human health and ecosystem functions. In search of innovative and eco-friendly protection techniques, seaweed extracts offer valuable fungicidal properties worth considering. Current research investigated the ability of seaweed extract to control *C. musae* under *in-vitro* and *in vivo* conditions. Red, green and brown seaweeds extract of water and acetone (1:10, 1:20, 1:30, and 1:40) were tested for the suppression of *C. musae* using poison food method. Data on inhibition percentage, disease incidence and severity were statistically analysed by using general mixed model in SAS statistical software. Means were separated using Duncan's method at 5% probability level. Significantly higher inhibition percentage was reported by red ($72.79 \pm 3.3\%$), followed by brown ($66.98 \pm 3.2\%$) and green ($57.81 \pm 2.7\%$) seaweed extracts. Higher inhibition percentages were reported by 1:10, 1:20, and 1:30 of water and acetone extracts. Inhibition percentage was significantly varied over the experimental period. *In-vivo* study was conducted with 1:10 water extraction of red and brown seaweed for freshly harvested *Cavendish* and *Ambun* bananas which were artificially inoculated with *C. musae*. Red ($17.85 \pm 9.2\%$) and brown ($29.28 \pm 9.0\%$) seaweed extracts recorded lower disease incidence than control ($67.14 \pm 7.4\%$). Red seaweed extracts successfully inhibited anthracnose in *Cavendish* compared to *Ambun*. In conclusion, red seaweed extract has potential biological control ability of *C. musae* under both *in-vitro* and *in-vivo* conditions for both *Cavendish* and *Ambun* varieties. These findings offer a valuable insight on using seaweed extracts to control banana anthracnose.

Keyword: *Ambun*, *Cavendish*, Disease incidence, Inhibition percentage