

EFFICACY OF SELECTED INORGANIC SALTS ON THE CONTROL OF ANTHRACNOSE FUNGUS (*Colletotrichum musae*) IN BANANA VARIETY KOLIKUTTU

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ABSTRACT

Anthracnose is a major postharvest disease causing significant reduction in the quality and quantity of banana production both globally and in Sri Lanka. Use of non-fungicidal approaches for the control of postharvest pathogens has become an emerging trend due to environmental and health hazards caused by the application of fungicides. Experiments were conducted to evaluate selected inorganic salts which are generally regarded as safe (GRAS) compounds for the control of banana anthracnose. The banana variety *Kolikuttu* was used for this study. The experiment was laid out in the completely randomized design with eight treatments and three replications for *in vivo* investigation and five treatments and four replications for *in vitro* experiment. The potential of 1% (w/v) sodium bicarbonate, 1% (w/v) sodium carbonate, 1% (v/v) clorox solution (a.i. sodium hypochlorite), hot water treatment (50 °C, 3 min) alone and in combination with the above inorganic salts (1%) with the hot water (50 °C, 3 min) to control the incidence of anthracnose in banana variety *Kolikuttu* was investigated during the storage at room temperature (28–30 °C). Two sets of experiments were conducted *in vivo* as natural infestation and artificial inoculation. In each set of *in vivo* experiment, twenty four matured, unripe fruits were evaluated for the selected parameters such as area of disease development, expansion rate of anthracnose lesion and the number of days taken for the anthracnose symptom to appear. *In vitro* experiment was carried out to evaluate the growth of causative pathogen *Colletotrichum musae* on potato dextrose agar. The parameters measured *in vitro* were growth rate of mycelia, mycelial inhibition percentage and lag period of mycelial growth. The severity of disease was evaluated against inorganic salts and combined treatment of inorganic salts with hot water in both *in vivo* and *in vitro* experiments.

Incidence of disease development was significantly ($p < 0.05$) reduced by the application of GRAS compounds. Among the non-fungicidal approaches tested, integrated approach of sodium carbonate with hot water treatment gave the highest performance in controlling anthracnose in

banana similar to fungicide application. In addition, the combination of salts with hot water treatment showed high efficacy in controlling anthracnose than the treatments with salts alone. Therefore, the integrated approach could be used as an alternative to synthetic fungicide and could eliminate the application of fungicide during the postharvest process of banana. Hence, combination of sodium carbonate with hot water treatment could be a commercially acceptable and economically feasible non-fungicidal approach for the postharvest control of anthracnose during the storage of banana.

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