Research Article

Nanotechnological Approach for Management of Anthracnose and Crown Rot Diseases of Banana

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Abstract

Anthracnose caused by *Colletotrichum musae* and Crown rot (a disease complex, main causal organism being *C. musae*) are considered as two most important post harvest diseases of banana (*Musa* sp.). Present study was undertaken to evaluate the antifungal efficacy of biosynthesized silver nanoparticles (BSNPs) against the pathogen and also to study the efficacy of BSNPs against anthracnose and crown rot diseases of banana. Fungicidal activity of BSNPs at different concentrations (0.0001%, 0.001%, 0.01%, 0.1% and 0.2%) was tested against *C. musae* and compared with chemical fungicide (Carbendazim @ 0.1%). BSNPs at a concentration of 0.2 per cent significantly inhibited mycelial growth of the pathogen. The effect of BSNPs against anthracnose and crown rot diseases of banana was also studied by undertaking five treatment combinations. Among all the treatments, pre harvest spray of 0.2 per cent BSNP one week prior to harvest alongwith hands dip treatment of harvested banana fruits in BSNPs for 10 min was best for anthracnose disease with a per cent disease index (PDI) of 51.72 against 97.17 in control after 15 days of harvest. In case of crown rot, highest PDI of 94.38 was recorded in control against 56.90 in the same treatment with BSNPs for 10 min was best for anthracnose disease with a per cent disease index (PDI) of 51.72 as against 97.17 in control after 15 days of harvest. In case of crown rot, highest PDI of 94.38 was recorded in control against 56.90 in the same treatment with 0.2 per cent of BSNPs . The highest shelf life of 15 days after harvest was recorded when banana fruits were treated with 0.2 per cent of BSNPs both as pre-harvest spray and postharvest application against 8 days in control. Spraying of recommended dose of carbendazim (0.1%) can increase the shelf life of banana fruits upto 14 days only.

Key words: Anthracnose, biosynthesized silver nanoparticles, *Colletotrichum musae* and crown rot

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