

Title Selection and testing of epiphytic yeasts to control anthracnose in post-harvest of papaya fruit

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Abstract

Anthracnose, caused by *Colletotrichum gloeosporioides*, is a major post-harvest disease in papaya fruit. The major objectives of the present work were to isolate, select and test the *in vitro* and *in vivo* ability of epiphytic microorganisms, isolated from papaya fruit and leaf surfaces, in controlling anthracnose onset after harvest. A total of 75 bacteria, 67 yeasts and 22 mycelial fungi were isolated. Thirty yeast isolates were able to inhibit the mycelial growth of *C. gloeosporioides in vitro* and seven of those were used in *in vivo* assays, resulting in the identification of two very effective isolates. Isolate CEN63, identified molecularly as *Cryptococcus magnus*, was the most effective in controlling the disease and therefore was studied in more detail. The results of the assays with *C. magnus* provided evidence that when fruit were treated with the antagonists at concentrations of 10^7 to 10^8 cells/ml, as early as 24 h, preferentially 48 h, before inoculation with the pathogen, the development of disease was significantly reduced. *C. magnus* is a potential antagonist for the development of a commercial product. Additional studies on the modes of action of this yeast isolate, as on its ability to interact with fungicides are being conducted to generate solid basis for the development of an environmentally friendly control agent.