

**Title** Control of plantain (*Musa paradisiaca*) fruit rot caused by *Fusarium verticillioides* using heat treatment

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#### **Abstract**

The control of plantain fruit decay by *F. verticillioides* initiated at the stalk was carried out using prestorage heat treatment - hot air (HA), steam (ST) and hot water (HW). Green, mature fruits harvested 80, 90 and 100 days after shooting were used. In preliminary experiments, HA and ST were tested at 50-55°C for 1, 2, 3 h to identify the temperature-time range of efficacy for disease control. These were then tested at narrower ranges which were different and specific for each heating method. Earlier investigations had identified the useful temperature-time combinations for HW, so the effect of fruit maturity on response to these treatments was investigated. All fruits were stored at 28°C and 98-100% RH after heat treatment. Results show that the stage of fruit maturity affected the efficacy of the various treatments. Fruits harvested at 100 days after shooting were the least responsive to HA and ST but HW at 53°C for 3 min and 50°C for 5 min was very effective on them. There was no significant advantage of prestorage HA treatment on 80 and 100-day fruits but significant disease control occurred in 90-day fruits with treatment at 50°C for 50 min. Significant disease control also occurred with steam treatment at 50°C for 5 and 40 min in 80- and 90-day-old fruit which remained healthy throughout their 50 days of storage. For 100-day-old fruit, ST treatment was effective in decay control till the 20<sup>th</sup> day of storage only; by which time control fruits were 90% rotten. HW controlled decay on all ages at the two treatment types tested. All heating methods tested showed potential benefit in decay control.