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Effects of modified atmosphere storage on banana postharvest diseases and the control of bunch main-stalk rot

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ABSTRACT

Banana (*Musa*, AAA) bunch-sections consisting of one hand attached to a short section of main-stalk were wound-inoculated with cultures of fungi isolated from diseased fingers, crowns, or main-stalks and stored in sealed polyethylene bags containing 3–7% oxygen, 10–13% carbon dioxide and $<0.1 \mu\text{l l}^{-1}$ ethylene for 40 days at 20°C, then ripened with ethylene in air for nine days. *Colletotrichum musae*, *Fusarium moniliforme* var. *subglutinans* and *Nattrassia mangiferae* caused high infection incidence in unripe fingers during storage. These fungi also caused crown rot, but only *F. moniliforme* var. *subglutinans* caused main-stalk rot. *Alternaria alternata* and *F. pallidoroseum* both caused some infection in unripe fingers during storage, and both subsequently caused crown rot. *A. alternata* also infected main-stalks. *Lasiodiplodia theobromae* and *Phomopsis musicola* infected only ripening fingers, and *F. culmorum* infected only crowns and main-stalks. The pathogenicity of some isolates was changed by interposing storage between inoculation and ripening. *C. acutatum* and *C. gloeosporioides* became unable to cause disease and *F. culmorum* caused less disease. In contrast, *A. alternata* and *F. pallidoroseum* became pathogenic to fingers, crowns and, in the case of *A. alternata*, to bunch main-stalks. Benomyl and prochloraz (500 mg l⁻¹) controlled most diseases at inoculation sites, and naturally-occurring main-stalk rot. Prochloraz controlled more diseases than benomyl, and this control was usually more effective.

Key words: Banana; *Musa*; Rot, finger, stalk, crown, bunch main-stalk; Benomyl; Prochloraz

INTRODUCTION

Modified atmosphere (MA) storage of bananas is a versatile technology applicable to a wide range of cultivars, including AA, AAA, AAB and ABB or BBB

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