

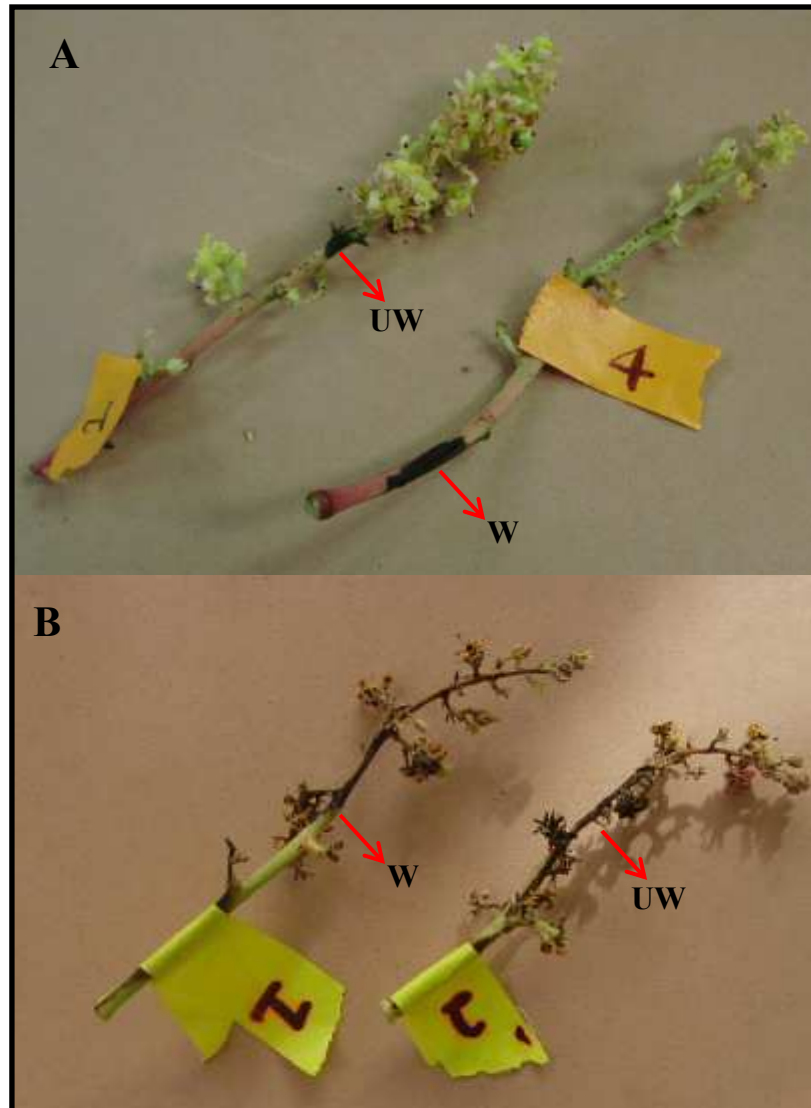
# First Report of *Neofusicoccum mangiferae* Causing Rachis Necrosis and Inflorescence Blight of Mango (*Mangifera indica*) in Puerto Rico

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Inflorescence blight is a major disease in mango production (2,3). During a disease survey of mango in Puerto Rico conducted from February to April in 2009, 20% of the inflorescences were affected with inflorescence blight showing rachis and flower necrosis. Symptoms were observed in 70% of samples at the Mango Germplasm Collection of the University of Puerto Rico's Experiment Station in Juana Diaz. Blighted inflorescence tissue (necrotic and the interface between necrotic and healthy tissue) from mango cultivars 'Haden' and 'Irwin' were disinfested with 70% ethanol, rinsed with sterile water and transferred to acidified potato dextrose agar (APDA). Isolations (40%) produced fungi in the Botryosphaeriaceae. Isolates 90LY, 94LY and 89LY, were purified and identified morphologically using taxonomic keys (1,4) and by DNA sequence analyses as *Neofusicoccum mangiferae* (Syd. & P. Syd.) Crous, Slippers & A.J.L. Phillips. On APDA, colonies were gray with aerial mycelia that turned dark gray with age. Pycnidia were globose to pyriform and dark brown to black. Conidia (n=50) were hyaline, ovoid, one-celled, and averaged 13.2  $\mu\text{m}$  x 6.3  $\mu\text{m}$  in size. PCR amplifications of the internal transcribed spacer region of rDNA using ITS5-ITS4 primers, and fragments of both  $\beta$ -tubulin and translation elongation factor 1-alpha (EF1- $\alpha$ ) genes using Bt2a-Bt2b and EF1728F-EF1986R primers, respectively, were sequenced and analyzed using BLASTN query. Accession numbers of gene sequences submitted to GenBank were KF479465-467 for ITS region; KF479468-470 for  $\beta$ -tubulin; and KF479471-473 for EF1- $\alpha$ . All sequences were 99 to 100% identical to reference isolate CMW7024 (4) of *N. mangiferae* (GenBank accessions AY615185, AY615172 and DQ093221). For each fungal isolate, pathogenicity tests were conducted on mango trees using six randomly selected, healthy mango inflorescences at full bloom using two trees per cultivar. Both needle-wounded and unwounded inflorescences were inoculated with 5-mm diameter mycelial disks from 8-day-old cultures grown on APDA. Inflorescences were incubated in clear plastic bags for eight days under field conditions. Controls were treated with APDA disks only. Inflorescences on 'Irwin' turned brown with necrosis extending from the rachis to flowers. Mycelial growth and inflorescence blight was observed with lesions ranging from 2 to 5 cm in length. On 'Haden', the rachis tissues turned brown and necrotic with lesions ranging from 1.5 to 2 cm long and without mycelial growth. *Neofusicoccum mangiferae* was re-isolated from all diseased inflorescences, and no symptoms developed on controls, which fulfilled Koch's postulates. The test was repeated once. *Neofusicoccum mangiferae* was associated with blossom blight in Australia and South Africa (2,3). This is the first report of *N. mangiferae* causing rachis necrosis and inflorescence blight on mango in Puerto Rico. *Neofusicoccum mangiferae* belongs

to a complex of pathogens causing inflorescence blight and rachis necrosis and, therefore, effective management of this important disease complex must involve control of this pathogen.

*References:* (1) A.J.L. Phillips. Key to the various lineages in “*Botryosphaeria*” Version 01 2007. Last retrieved 24 September 2013 from [http://www.crem.fct.unl.pt/botryosphaeria\\_site/key.htm](http://www.crem.fct.unl.pt/botryosphaeria_site/key.htm). (2) G.I. Johnson et al. Ann. Appl. Biol. 119: 465, 1991. (3) J.H. Lonsdale and J.M. Kotzé, Acta Horticulturae 341: 345, 1993. (4) P.W. Crous et al. Studies in Mycology 55: 235, 2006.



**Figure 1** Symptoms of *Neofusicoccum mangiferae* on inflorescences of mango cultivars ‘Haden’ and ‘Irwin’ eight days after inoculation. **A)** Rachis necrosis caused by *N. mangiferae* on wounded (W) and unwounded (UW) tissue of cultivar ‘Haden’. **B)** Inflorescence blight caused by *N. mangiferae* on wounded (W) and unwounded (UW) tissue of cultivar ‘Irwin’.