Research Note

FIRST REPORT OF APICAL TIP NECROSIS OF MANGO SEEDLINGS CAUSED BY FUSARIUM LATERITIUM *NESS [= GIBBERELLA BACCATA (WALLR.) SACC.] IN PUERTO RICO*[1,2]

Nisael Nieves-Méndez[3], *Lydia I. Rivera-Vargas*[4] *and Alejandro E. Segarra-Carmona*[5]

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Mango (*Mangifera indica* L.) is the most important commercial fruit in Puerto Rico with a market value of $17 million and 950 ha committed to its production (Department of Agriculture of Puerto Rico, 2006). Mostly, mango fruit is exported to Europe and North America. Leaf mottle, leaf deformation, defoliation, and loss of apical dominance caused by tip necrosis were observed in vegetative tissue of six-to seven-month-old nursery plants at the Agricultural Research Station in Juana Díaz, Puerto Rico. To identify the causal agent associated with the observed symptoms, we isolated fungal pathogens from the margins of infected tissue and sent leaf samples to Agdia®[6] (Elkhart, IN), a plant diagnostic company, in order to identify viruses and phytoplasms. For the isolation of fungi, apical tip sections (2 mm) were superficially disinfested in serial immersions of 70% ethyl alcohol and 0.5% sodium hypochlorite; the sections were then rinsed with sterile deionized double-distilled water. Tissue sections were transferred to peptone-selective media amended with penta-chloro-nitro-benzene or acidified potato dextrose agar and incubated at 25° C for 21 days. Fungal colonies showed white floccose mycelium and macroconidia were straight to curved (13 to 15 µm × 3 to 4 µm) with 1 to 3 septa and a short beak (Figures 1A and B). Microconidia were absent. Neither chlamydospores nor ascomata were observed on culture media.

Fungus isolated from apical tips was identified as *Fusarium lateritium* [= *Gibberella baccata* (Wallr.) Sacc.] and confirmed by Dr. P. F. Cannon (CABI Bioscience, UK). Pathogenicity tests were conducted under greenhouse conditions on apical tips of six- and seven-month-old mango seedlings (cv. Saigon). Conidial suspensions (1×10^6 conidia/ml) from fungal pure cultures grown on potato dextrose agar were made by washing the surface of the colony with 50 ml sterile deionized double-distilled water. Conidial suspensions were sprayed on wounded and unwounded mango apical tissue. Controls were sprayed with sterile deionized double-distilled water. To retain humidity, inoculated

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[3]Former Graduate Student, Department of Crop Protection, University of Puerto Rico, Mayagüez Campus.

[4]Professor, Department of Crop Protection, Mayagüez Campus, Mayagüez, Puerto Rico 00681.

[5]Associate Professor, Department of Crop Protection, Mayagüez Campus, Mayagüez, Puerto Rico 00681.

[6]Virus and phytoplasm identification service was mentioned to provide specific information and do not constitute a warranty by the University of Puerto Rico, nor is this mention a statement of preference over other identification services.

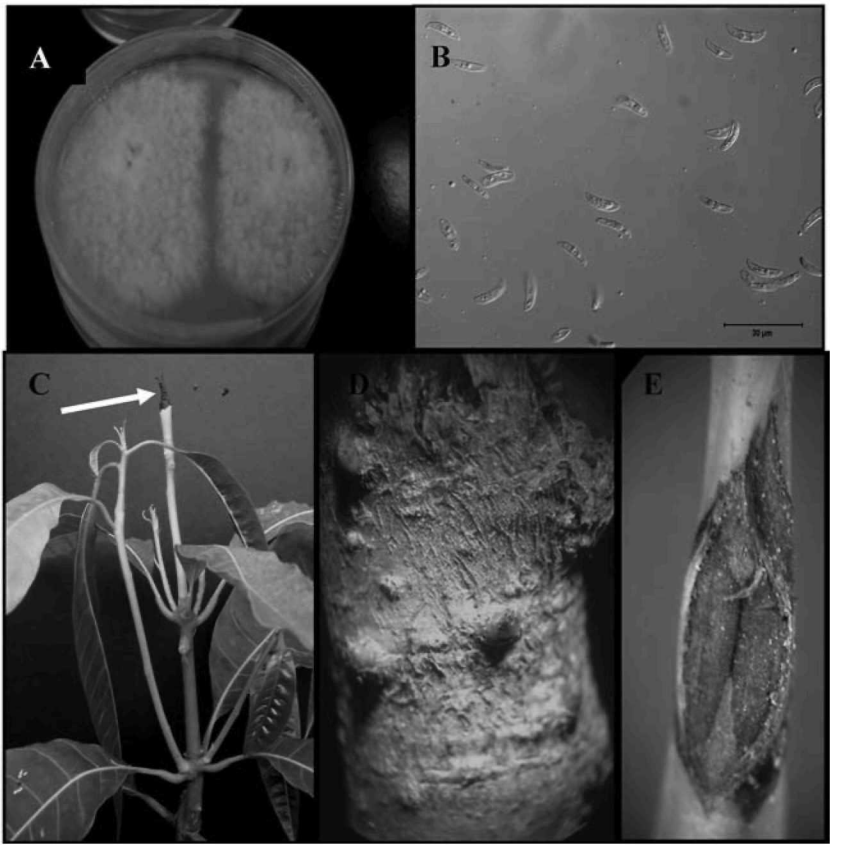

FIGURE 1. A) Fungal colony of *Fusarium lateritium* (= *Gibberella baccata*) grown on peptone and penta-chloro-nitro-benzene amended media; B) *F. lateritium* macroconidia; C) Apical tip necrosis, loss of apical dominance (→); D) development of lateral buds; and E) stem cankers were observed in six- and seven-month-old mango seedlings (cv. Saigon) three months after inoculation with *F. lateritium*. The fungus was reisolated from symptomatic wounded seedlings after pathogenicity tests.

plants were covered with plastic polystyrene bags for 72 h. Five seedlings were inoculated per treatment (wounded and unwounded seedlings); experiments were repeated twice. The fungus was reisolated from symptomatic wounded seedlings after pathogenicity tests.

Pathogenicity tests showed *F. lateritium* caused apical necrosis, loss of apical dominance and cankers only in wounded tissues (Figures 1C, D). Leaf mottling and distortion were not observed in inoculated mango seedlings. Control seedlings did not show any symptoms. *Fusarium lateritium* has been associated with cankers and dieback in several tree species, and with chlorosis and leaf distortion in sweet potato (Belisario et al., 2005; Clark and Hoy, 1994). In Puerto Rico, leaf deformation in mango seedlings was previ-

ously associated with heavy infestation of *Polygophagotarsonemus latus*, a common phytophagous mite (Segarra and Nieves, 2006). *Fusarium lateritium* might be invading plant tissues through wounds produced by mites (Segarra and Nieves, 2006). Leaf samples were sent to Agdia® for identification of eighteen viral groups and eleven phytoplasmas; diagnoses using PCR were negative. Viral genera tested were *Begomovirus, Bromovirus, Carlavirus, Carmovirus, Closterovirus, Comovirus, Curtovirus, Dianthovirus, Fabavirus, Ilarvirus, Luteovirus, Nepovirus, Potexvirus, Potyvirus, Tobamovirus, Tombusvirus, Tospovirus* and *Trichovirus*. Phytoplasma groups tested were ash yellows, aster yellows, clover proliferation, coconut lethal yellows, elm yellows, lilac witches-broom, maize bushy stunt, potato witches-broom, tomato big bud, *Vinca virescens* and western X-disease. Cause of leaf mottle symptoms remains unresolved.

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