

Short Communication

Report of *Fusarium oxysporum* on *Codiaeum variegatum* (L.) Blume (Euphorbiaceae) cultivars in Nigeria

*Fapohunda, S. O., Esan, E. B., Ogunwenmo, K. O. & Adedayo, A.
Babcock University, Ilishan-Remo, Department of Basic and Applied Sciences, PMB 21244, Ikeja,
Lagos 100 001, Nigeria

Received: 6 Sept., 2005 Accepted: 24 Sept., 2005

*Correspondence author <oystak@yahoo.co.uk>

Abstract

Fusarium oxysporum was identified as being associated with the browning, blight and necrosis of leaves of garden croton *Codiaeum variegatum* (L.) Blume. Two cultivars of this species, cvs. *ovalifolium* and *sunrise*, were most susceptible to the disease out of the 48 being maintained in the germplasm repository (Botanical garden) of Babcock University, Ilishan-Remo. Macroscopic, microscopic and Koch's postulate tests confirmed the identity of the fungus.

Keywords: *Fusarium oxysporum*, *Codiaeum variegatum*, cv. *ovalifolium*, cv. *sunrise*, Deuteromycete

This is a report of *Fusarium oxysporum* isolated from domesticated and cultivated varieties of *Codiaeum variegatum* (garden croton), a member of the family Euphorbiaceae, in a single location in Ilishan-Remo, Nigeria. The croton is a very popular ornamental in Nigeria because of its variegated leaves, fascinating color combination, resilience to harsh weather, ease of propagation and diverse leaf shapes. At present, forty-eight different cultivars have been established and are being maintained in the Germplasm repository (Botanical garden) at Ilishan-Remo Campus of the Babcock University.

Although the disease condition was first observed in 1990, this study was conducted in 2004-2005 to determine the cause of the disease symptoms. From three replicate blocks planted with sixteen cultivar clones each, only the cv. *ovalifolium* and cv. *sunrise* were most susceptible with over 80% occurrence of the disease. Consequently the disease symptoms were studied in these two cultivars. Symptoms observed included a mild leaf discoloration and development of pustle-like lesions, which often became brown, blighted and necrotic (Fig 1). Most times, these spots coalesced and sporulations occurred, followed by leaf abscission in the cv. *ovalifolium* and twig die-back in the cv. *sunrise*.

The fungus was identified as *Fusarium oxysporum* using macroscopic and microscopic characters when plated on Potato Dextrose Agar (PDA) (Koneman *et al.*, 1992). On staining with cotton blue in lactophenol, the conidia were fusiform or sickle shaped, multiseptate with elongated apical and pedicellate basal cell.

A modified pathogenicity test on the leaves was done (Tsuchiya *et al.*, 2004) in which 30 maturing, healthy green leaves were washed with tap water for 10 minutes, disinfected with 70% ethanol for 5 seconds and placed in Petri dishes. The leaves were punctured with a sterile needle and 0.5ml of culture filtrate, filtered through cotton wool, was applied as rub-inoculation to each site, then incubated at ambient ($27\pm 1^{\circ}\text{C}$) temperature. Symptom development was observed daily for 3 weeks. Control plant received 0.5ml distilled water on its punctured spots and 3 replicates of the experimental and control were made. All inoculated plants showed blighted appearance and weight loss when placed under the same conditions of natural light, humidity and air. When the diseased leaves were replated on PDA, the same *Fusarium oxysporum*, a destructive deuteromycete, with profuse production of asexual conidia, and having same morphology as earlier described, when observed microscopically, was recovered. This recovery confirms

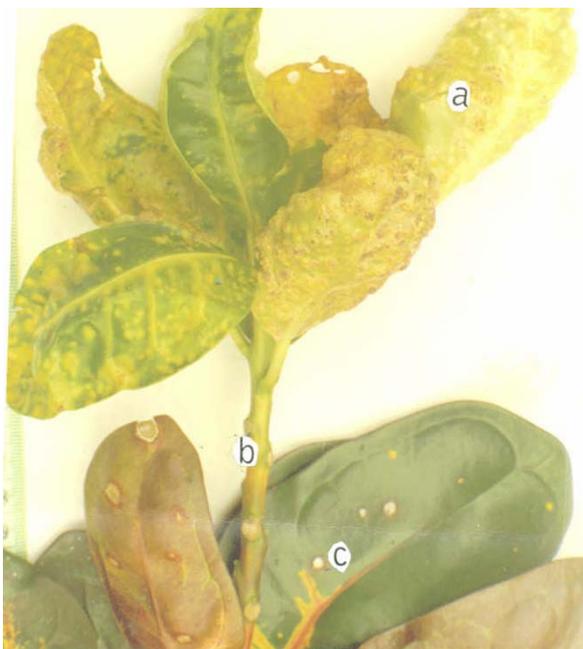


Fig 1: Diseased shoot of *Codiaeum variegatum* cv. *ovalifolium*, a. leaf heavily attacked by *Fusarium oxysporum*, b. defoliated stem, c. resistant non-abscised mature leaf

that the fungus initially isolated from diseased plants and, deliberately inoculated on healthy plants was a causal organism of the observed symptoms. *Fusarium* sp. had earlier been associated with the blight of turfgrass (Worf *et al.*, 1986) and wheat (Burgess *et al.*, 1987; Edwards *et al.*, 2001). It is concluded that

this fungus is an emerging pathogen of crotons which must attract intensive attention, aimed at the control of its spread in ornamental species.

References

- Burgess, L. W., Kelvin, T. A., Bryden, W. L., & Tobin, N. F. 1987. Head blight of wheat caused by *Fusarium graminearum* Group 1 in NSW in 1983. *Aust. J. Plant Pathol.* **16**: 72-78.
- Edwards, S. G., Pirgozliev, S. R., Hare, M. C. & Jenkinson, 2001. Quantification of trichothecene producing *Fusarium* species in harvested grain by competitive PCR to determine efficiencies of fungicides against *Fusarium* head blight of winter wheat. *Appl. Env. Microbiol.* **67**: 1575-1580.
- Koneman, E. W., Allen, S. D., Janda, W. M., Schreckenberger, P. C. & Winn, W. 1992. *Colour Atlas and Textbook of Diagnostic Microbiology*. 4th ed. J. B. Lippincot, Philadelphia. 1154pp.
- Tsuchiya, K., Ursel, C. C. M. & Nozu, Y. 2004. Production and preliminary characterization of monoclonal antibodies raised against *Xanthomonas campestris* pv. *mangiferaeindicae*. *J. Gen. Plant Pathol.* **70**: 27.33.
- Worf, G. L, Stewart, J. S. & Avenius, R. C. 1986. Necrotic ringspot disease of turfgrass in Wisconsin. *Plant Disease* **70**: 453-458.