



First report of *Phytophthora nicotianae* as pathogen of blue Mediterranean fan palm

R. Faedda^{1*}, A. Pane¹, G. Granata¹ and G. Magnano di San Lio²

¹ Dipartimento di Scienze e Tecnologie Fitosanitarie, University of Catania, 95123 Catania, Italy ; ² Dipartimento di Gestione dei Sistemi Agrari e Forestali, Mediterranean University of Reggio Calabria, Feo di Vito, 89122 Reggio Calabria, Italy

*E-mail: rfaedda@unict.it

Received: 05 Nov 2010. Published: 12 Jan 2011. Keywords: *Chamaerops humilis*, palm disease

Blue mediterranean fan palm (*Chamaerops humilis* var. *argentea*) is a shrub-like palm with clumps that are pale silvery-blue in colour. This species is native to the western Mediterranean basin and appreciated as an ornamental in Europe. During the summer of 2009, 40% of a nursery stock of approximately 30,000 three-year-old potted blue Mediterranean fan palms growing in the open air, in an ornamental nursery in eastern Sicily (Italy), showed wilting and dieback. Initial symptoms were a dark brown rot on the petiole base and blight of the unopened spear leaves (Fig. 1). Foliar symptoms were associated with the browning of basal stem and root rot (Fig. 2). A *Phytophthora* species was consistently recovered by plating rotted tissues of plants showing symptoms onto a selective medium (Masago *et al.*, 1977), and pure cultures were obtained by single-hypha transfers.

The species was identified by morphological and cultural characters (Erwin & Ribeiro, 1996) as *Phytophthora nicotianae* Breda de Haan. Isolates formed stoloniferous colonies on potato dextrose agar (PDA) and grew between 8°C and 36°C, with the optimum at 30°C. On V8 juice agar, they produced persistent, mono- and bipapillate, spherical to ovoid, ellipsoid, obpyriform sporangia (28-54 x 42-46 µm; length/breadth ratio of 1.3:1). All isolates were A1 mating type and formed spherical oogonia with smooth walls (mean diameter 26 ± 2 µm) and amphigynous antheridia in dual cultures with reference *P. nicotianae* isolates of A2 mating type. Spherical, intercalary chlamydospores were produced. The internal transcribed spacer (ITS) region of rDNA of a representative isolate (IMI 398853) from *C. humilis* var. *argentea* was amplified using primers ITS6/ITS4 (Cooke *et al.*, 2000), sequenced and deposited in GenBank (Accession No. HQ287571). BLAST analysis of the 853-bp fragment showed 99% identity with the sequences of various *P. nicotianae* isolates (e.g. Accession No. AF467087). Pathogenicity tests were performed by wound-inoculation with a cork borer of ten two-year-old potted blue Mediterranean fan palms. A mycelial plug of seven-day-old colonies

grown on PDA was inserted into the basal stem and the hole was covered with the removed tissue and sealed with Parafilm[®]. Control plants were inoculated with sterile agar plugs. All plants were incubated at 24 ± 1°C for 48 h with 100% relative humidity. After 30 days, all inoculated plants showed withering symptoms, whereas control plants remained healthy. *P. nicotianae* was re-isolated only from plants in which symptoms developed. Although *P. nicotianae* is one of the most frequent *Phytophthora* species in ornamental nurseries in Sicily (Pane *et al.*, 2005), to our knowledge this is the first report of this *Phytophthora* species as a pathogen on *C. humilis* worldwide. It is conceivable that moistened soil due to excess of irrigation and heavy rainfall during hot season enhanced disease development in the nursery.

References

- Cooke DEL, Drenth A, Duncan JM, Wagels G, Brasier CM, 2000. A molecular phylogeny of *Phytophthora* and related Oomycetes. *Fungal Genetics and Biology* **30**, 17-32. [doi:10.1006/fgbi.2000.1202]
- Erwin DC, Ribeiro OK, 1996. *Phytophthora Diseases Worldwide*. St. Paul, MN, USA: APS Press.
- Masago H, Yoshikawa M, Fukada M, Nakanishi N, 1977. Selective inhibition of *Pythium* spp. on a medium for direct isolation of *Phytophthora* spp. from soil and plants. *Phytopathology* **67**, 425-428. [doi:10.1094/Phyto-67-425]
- Pane A, Martini P, Chimento A, Rapetti S, Savona S, Grasso FM, Cacciola SO, 2005. *Phytophthora* species on ornamental plants in Italy. *Journal of Plant Pathology* **87** (4, Special issue), 301.



Figure 1



Figure 2

To cite this report: Faedda R, Pane A, Granata G, Magnano di San Lio G, 2011. First report of *Phytophthora nicotianae* as pathogen of blue Mediterranean fan palm. *New Disease Reports* **23**, 3. [doi:10.5197/j.2044-0588.2011.023.003]

©2011 The Authors

This report was published on-line at www.ndrs.org.uk where high quality versions of the figures can be found.