

See discussions, stats, and author profiles for this publication at: <https://www.researchgate.net/publication/276091815>

First Report of Heart Rot of Pomegranate (*Punica granatum*) Caused by *Alternaria alternata* in Italy

Article in *Plant Disease* · April 2015

DOI: 10.1094/PDIS-02-15-0238-PDN

CITATIONS

3

READS

272

7 authors, including:



Roberto Faedda

University of Catania

54 PUBLICATIONS 477 CITATIONS

[SEE PROFILE](#)



Giovanni Granata

University of Catania

22 PUBLICATIONS 107 CITATIONS

[SEE PROFILE](#)

Some of the authors of this publication are also working on these related projects:



Metagenomic strategies to assess genetic diversity in soil-borne *Phytophthora* species [View project](#)



Italian aphid fauna [View project](#)

**APS Journals**

The premier source for peer-reviewed plant pathology research since 1911.

[Journals Home](#)[APS Home](#)[IS-MPMI Home](#)[My Profile](#)[Subscribe](#)[Search](#)[Advanced Search](#)[Help](#)[Share](#) |[Subscribe](#)[Free alerts](#)[RSS](#)[About the current issue's cover](#)

Impact Factor: 3.02

ISSN: 0191-2917

SEARCH

Enter Keywords

- Phytopathology
- Plant Disease
- MPMI

search[Advanced Search](#)**Resources**

plant disease

Editor-in-Chief: Mark L. Gleason

Published by The American Phytopathological Society

[Home](#) > [Plant Disease](#) > [Table of Contents](#) > [Full Text HTML](#)
[Previous Article](#) | [Next Article](#)

Posted online on .
<http://dx.doi.org/10.1094/PDIS-02-15-0238-PDN>

DISEASE NOTES

First Report of Heart Rot of Pomegranate (*Punica granatum*) Caused by *Alternaria alternata* in Italy

R. Faedda, G. Granata, and G. E. Massimino Cocuzza, Department of Agriculture, Food and Environment, University of Catania, 95123 Catania, Italy; **V. Lo Giudice** and **G. Audoly**, Department of Agriculture, University Mediterranea of Reggio Calabria, Feo di

Quick Links[Add to favorites](#)[E-mail to a colleague](#)[Alert me when new articles cite this article](#)[Download to citation manager](#)[Related articles found in APS Journals](#)**Article History**

Ahead of Print: 10 Aug 2015

[About Plant Disease](#)[First Look](#)[Most Downloaded Articles](#)[Submit a Manuscript](#)[Customer Care](#)[About My Password](#)[Copyright and Permissions](#)[Plagiarism and Ethics](#)[Advertise](#)[e-Xtra](#)[Open Access](#)

Vito s.n.c., 89122 Reggio Calabria, Italy; and **A. Pane**, and **S. O. Cacciola**, Department of Agriculture, Food and Environment, University of Catania, 95123 Catania, Italy.

First Look: 20 Apr 2015

Accepted: 14 Apr 2015

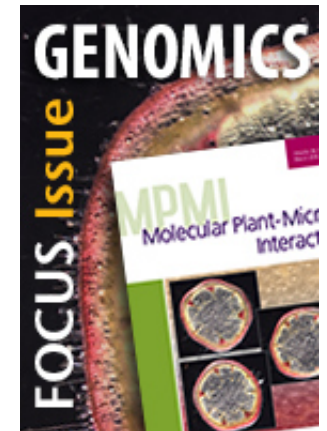
[Citation](#) | [e-Xtra](#)[Open Access.](#)

ABSTRACT

Pomegranate (*Punica granatum* L.), native to central Asia, has been cultivated in Italy since ancient times, but has only recently become a commercial fruit crop. In 2008, its cultivation extended 7 ha and in 2013 was over 130 ha. The prevalent cultivar is 'Wonderful' and major producing regions are Apulia, Sicily, Sardinia, Calabria, and Latium. In the provinces of Catania and Syracuse (eastern Sicily), in September and October 2013 and 2014, in several commercial orchards of 'Wonderful' a fruit disease with an incidence of 1 to 9% was observed. The symptoms consisted of a black rot of arils, which spreads from the calyx area, sometimes confined to part of fruit compartments, while the rind remained unaffected. When fruit was cut open, a dark gray to black mold emerged. Affected mature fruit were lighter in weight but remained firm and attached to the tree canopy. The only external symptom was an asymmetrical shape and a dark colored area of rind corresponding to the interior rot. Isolations from infected tissues on potato carrot agar (PCA) with 500 mg/liter of streptomycin sulfate gave consistently sooty black and turfy fungal colonies identified as *Alternaria* sp. on the basis of conidia morphology (Simmons 2007). On PCA colonies produced single, suberect conidiophores with an apical cluster of multiple branching chains of conidia. Conidia were olivaceous to brown, mostly ovoid or ellipsoid, with both transverse (1 to 7) and longitudinal (0 to 5) septa and a prominent tapered beak; they measured 9 to 30 × 5 to 12 (average 20.2 × 9.4) μm. To identify the species, the ITS-rDNA and partial TEF1-alpha regions of two representative single-conidium isolates (PhP1 and PhP2) were amplified and sequenced with primers ITS1-ITS4 and EF1-728F and EF1-986R, respectively (Woudenberg et al. 2013). Sequences (GenBank Accession Nos. KP861900, KP861901 for ITS, and KP861902, KP861903 for TEF1-



alpha regions, respectively) were identical (100% similarity) to those of ex-epitype CBS 916.96 of *A. alternata* (Fr.) Keissl (GenBank accessions AF347031 and KC584634). Pathogenicity tests of the isolates PhP1 and PhP2 were performed on detached, ripening fruits of 'Wonderful'. Fruits were sterilized for 3 min in a 1% NaOCl solution and rinsed in sterile distilled water (SDW). A suspension of 5×10^4 conidia/ml was injected (0.5 ml/fruit) into the aril compartments of 10 fruit per isolate with a 23-gauge syringe. Ten control fruit were inoculated with SDW. After 12 days at 25°C, all fruit inoculated with the fungus showed symptoms similar to those observed in naturally infected fruit. Both isolates decayed the arils without affecting rind and compartment membranes. Control fruits showed no symptoms. *A. alternata* was reisolated only from symptomatic fruits, thus confirming Koch's postulates. The heart rot of pomegranate, also known as black rot, was reported in other major pomegranate producing countries, such as Greece, Israel, and California (Ezra et al. 2015; Thomidis 2014). To our knowledge, this is the first report of heart rot in Italy. This disease is a serious concern for expanding pomegranate industry also due to the difficulty in screening infected fruit on the basis of external symptoms.



References:

Section:

-
- Ezra, D.**, et al. 2015. Plant Dis. 99:496. 10.1094/PDIS-07-14-0707-RE. [\[Abstract\]](#)
- Simmons, E. G.** 2007. *Alternaria* An Identification Manual. CBS Fungal Biodiversity Centre, Utrecht, Netherlands.
- Thomidis, T.** 2014. Australas. Plant Pathol. 43:583. 10.1007/s13313-014-0300-0 [\[CrossRef\]](#) [\[ISI\]](#)
- Woudenberg, J. H. C.**, et al. 2013. Stud. Mycol. 75:171. 10.3114/sim0015 [\[CrossRef\]](#) [\[ISI\]](#)

Citation | [e-Xtra](#)