

# Occurrence of *Phomopsis* sp. causing cankers on pecan trees in Buenos Aires province, Argentina

M.C. Noelting<sup>1\*</sup>, G.M. Mantz<sup>1</sup>, S.J. Maiale<sup>2,3</sup> and M.C. Molina<sup>1,3</sup>

<sup>1</sup> Instituto Fitotécnico de Santa Catalina, Facultad de Ciencias Agrarias y Forestales, Universidad Nacional de La Plata, Garibaldi No. 3400, Llavallol CP1836, Buenos Aires, Argentina

<sup>2</sup> Instituto de Investigaciones Biotecnológicas - Instituto Tecnológico Chascomús (IIB-INTECH), Av. Intendente Marino Km 8 Chascomús CP 7130, Buenos Aires, Argentina

<sup>3</sup> CONICET (Consejo Nacional de Investigaciones Científicas y Técnicas), Av. Rivadavia 1917, CP 1033 Buenos Aires, Argentina

\*mcnoelting@hotmail.com

Received: 26 Aug 2015; Published: 08 Feb 2016

**Keywords:** fungal disease

Production of pecan (*Carya illinoensis*) continues to increase in Argentina, due mainly to its nutritional qualities and sustained export demand. In April 2014, the presence of cankers on branches and twigs was observed on pecan trees in the province of Buenos Aires, where the incidence ranged from 10 to 50% of the surveyed plantations (Fig. 1). Fungal isolates with morphological characteristics similar to those of *Phomopsis* (Sutton, 1980) were collected from cankers on potato dextrose agar after seven days of incubation in a growth chamber at 25°C with a 12 h photoperiod. Colonies in their early stages were whitish cottony (Fig. 2). They contained numerous, globose, brown to black pycnidia of  $346.1 \pm 59.8 \mu\text{m} \times 286.4 \pm 55.6 \mu\text{m}$  (Fig. 3), alpha hyaline conidia, fusiform to ellipsoid in shape, bigutulate with an average size of  $6.8 \pm 1.0 \mu\text{m} \times 2.0 \pm 0.2 \mu\text{m}$ , and beta filiform hyaline conidia, hamate in shape with average size of  $21.6 \pm 3.9 \mu\text{m} \times 1.0 \pm 0.1 \mu\text{m}$ .

Nucleic acid was extracted using a Promega Wizard genomic DNA purification kit (Madison, WI, USA) and the ITS region was amplified using the universal primers ITS4 and ITS5. The resulting sequence of 950 bp (GenBank Accession No. KU359781) was compared to other sequences and was most similar to *Diaporthe middletonii* (KJ197286, 99%), *D. beilharziae* (GQ250220, 98%), *D. acaciurum* (KP004460, 98%), *D. infecunda* (KC343132, 98%) and *D. sackstonii* (KJ197287, 97%). However, the biological and morphological characters of the *Diaporthe* colonies isolated from pecan were most similar to the *Phomopsis* anamorphic state of *D. infecunda* (Gomes *et al.*, 2013). It seems likely the isolated fungus belongs to a species of *Phomopsis* not previously recorded on pecan. To confirm the pathogenicity of the isolates, the toothpick inoculation method was used. The inoculum was introduced into branches and twigs of pecan plants through a small incision made with a scalpel. Plants were covered with a plastic film and incubated in a growth chamber at 25°C for 30 days. Typical disease symptoms were observed 25 days after inoculation on branches and the inoculated pathogen was re-isolated, thus confirming pathogenicity to pecan and fulfilling Koch's postulates. The culture has been deposited at the La Plata Spegazzini Colección de Cultivos Argentina (Accession number 1219).

In Argentina, the *Phomopsis* genus has been reported previously on pecan nuts (Comerio, 2007). In this case, we report *Phomopsis* sp., anamorphic state of *Diaporthe*, as the causative agent of cankers on pecan for the first time in Argentina. Further studies will be necessary to fully resolve the taxonomy of *Phomopsis* sp. associated with cankers on pecan.

## Acknowledgements

We would like to thank the Universidad Nacional de La Plata and a private pecan producers' consultant for their financial assistance to this study, and Dr. Adriana Alippi for critical reading of the manuscript.

---

## References

- Comerio RM, 2007. Hongos presentes en nueces de pecán In: Lavado R, Frusso E, eds. *La Producción de Pecán en Argentina*. Buenos Aires, Argentina: Universidad de Buenos Aires, 14.
- Gomes RR, Glienke C, Videira SIR, Lombard L, Groenewald JZ, Crous PW, 2013. *Diaporthe*: a genus of endophytic, saprobic and plant pathogenic fungi. *Persoonia* **31**, 1-41. [<http://dx.doi.org/10.3767/003158513X666844>]
- Sutton BC, 1980. *The Coelomycetes*. Kew, Surrey: UK Commonwealth Mycological Institute.



Figure 1: Canker on pecan branch.



Figure 2: Colony of *Phomopsis* sp. isolated from pecan on potato dextrose agar medium.

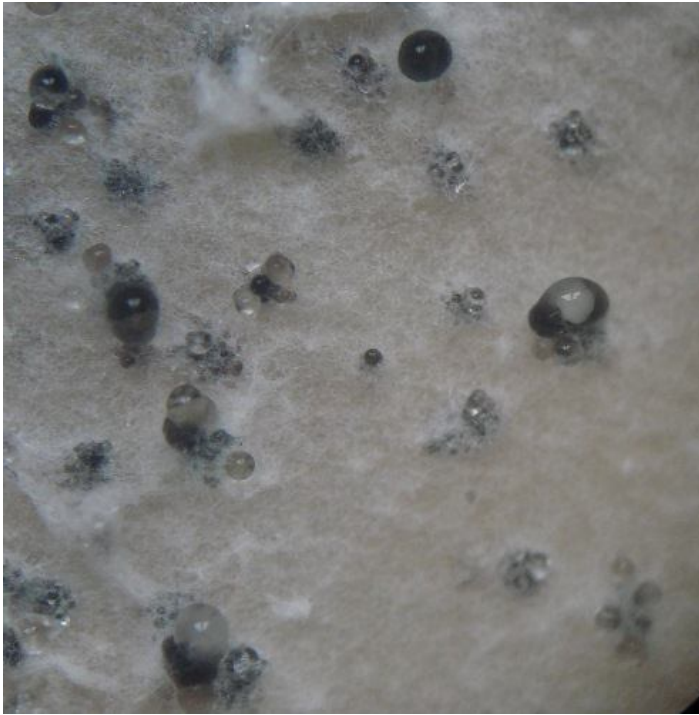


Figure 3: Pycnidia and cirri of *Phomopsis* sp. isolated from pecan.