Identification of Alternaria spp. associated with anthracnose, leafspot and the role mycotoxin production on pecans in South Africa.

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Abstract. The pecan industry is growing at a fast rate in South Africa, and is still expected to expand significantly in the next few years, based on the number of trees planted each year. This expansion is normally done on land that was previously used for other crops, or trees are planted on virgin land. This opens the door for existing ecosystems to be disrupted and new interactions with living organisms such as microorganisms and insects to be established. Previous studies indicated that anthracnose and leaf spot are regularly associated with pecans in the Hartswater, Prieska and Eastern Cape areas, and *Alternaria* spp. are regularly isolated from diseased material. These types of fungi have shown to be either endophytic, saprophytic, or pathogenic on a wide range of plant hosts. A study was done where all the major pecan production areas were visited and *Alternaria* isolates were obtained from apparently healthy material, as well as plant material with typical symptoms of leafspot and anthracnose. The aim of this study was to identify these *Alternaria* isolates using a multigene phylogenetic approach. Sequences, such as those of the Internal Transcribed Spacer (ITS), Glyceraldehyde 3-phosphate dehydrogenase (GAPDH), RNA Polymerase II subunit gene regions (RPB2), Translation-elongation factor 1α (Tef1), *Alternaria* major allergen gene (Alt a 1), Endopolygalactronase (EndoPG), Anonymous gene (OPA10-2) gene regions, indicated that isolates from across South Africa grouped in the *A. alternata* section. These included isolates obtained from both lesions and from apparently healthy tissue. This could make the control of these fungi difficult, but keeping the pecan tree overall healthy through other means such as nutrition, water and agricultural practices could limit disease outbreaks.

Keywords: Pecans, *Alternaria* spp., anthracnose, leafspot, Multi-gene phylogeny.