



Fig. 1. Anthracnose infected lupin plants: (a) hot spot in susceptible narrow leafed lupin (*Lupinus angustifolius*) arising from infected seed; (b) infected albus lupin stems (*Lupinus albus*) with lesions containing pink-orange spore masses; (c) infected pods of narrow leafed lupin; (d) twisting associated with anthracnose infection in sandplain blue lupin (*Lupinus cosentinii*). Photo credits: G. Thomas.

Disease: Lupin anthracnose
Pathogen: *Colletotrichum lupini*
Classification: K: Fungi, P: Ascomycota, C: Sordariomycetes, O: Phyllachorales, F: Phyllachoraceae

Anthracnose is a serious disease of lupins worldwide, causing significant yield losses. It was first identified in Western Australian lupin crops in 1996. The primary mode of disease spread is through infected seed with secondary spread through rain-splash of spores from infected plants.

The Pathogen: In 2002 the pathogen was redescribed as *Colletotrichum lupini* by Nirenberg, Feiler and Hagedorn. It had previously been referred to as either *C. gloeosporioides* or *C. acutatum*.

Distribution: Anthracnose is present in almost all lupin producing countries. In Australia, it was first detected in commercial crops in Western Australia (WA) in 1996. It has established in WA and in parts of South Australia but not in the lupin production zones in New South Wales or Victoria.

Symptoms: Anthracnose infects all above-ground parts of the lupin plant. The most distinctive symptom is bending and twisting of stems with a lesion containing pinkish-orange spore mass in the crook of the bend. The stem or branches can be completely girdled by lesions or so weakened that they break. Pods develop lesions similar to stems and infections at this stage can result in complete loss of pods or production of infected seed. Infected seed may be shrivelled and discoloured or may be symptomless.

Host Range: All lupin species are susceptible. Lupins are grown as a grain legume crop in Australian agriculture or as ornamentals in home gardens. In WA, wild sandplain lupins are endemic in pastures and roadsides and act as a reservoir for the fungus and a source of infection annually.

Impact: Yield losses of more than 50% have been recorded in susceptible varieties. Resistant narrow leafed lupin cultivars are available, however albus lupin production in WA has been drastically reduced due to the lack of resistant cultivars. Trade of lupin grain from WA into eastern Australian states is restricted to avoid disease introduction.

Management: Restricting seed transmission is the primary method of managing this disease. Quarantine restrictions to prohibit import of infected seed prevents disease establishment. In affected areas, use of clean seed or application of a registered fungicide seed dressing will reduce seed transmission. Reducing reservoirs of infection, such as wild sandplain lupins in WA, reduces spread from sources outside a crop. Choosing available resistant cultivars significantly reduces yield losses. Application of registered foliar fungicides can be effective.

Further Reading: Thomas (2003) Lupin anthracnose-identification and management. DAFWA farmnote No. 15/2003, Thomas and Sweetingham (2004) *Australasian Plant Pathology* **33**:571-577; Thomas et al (2008) *Australasian Plant Pathology* **37**:35-39; Nirenberg et al. (2002) *Mycologia* **94**:307-320

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