



Fig. 1. Ascochyta blight symptoms on field peas artificially inoculated with conidia of *Phoma koolunga* (a); Culture of *Phoma koolunga* grown on PDA (b); Conidia of *Phoma koolunga* (c). Photo credits: Jenny Davidson, South Australia.

Disease: Ascochyta blight complex of field peas

Classification: K: Fungi, D: Ascomycota, C: Euascomycetes, O: Pleosporales, F: Pleosporaceae.

Ascochyta blight (synonym: blackspot) is the most serious disease of field peas world wide and is caused by a complex of fungi. *Phoma koolunga* has recently been identified as part of this complex in South Australia. Major gene resistance has not been detected and fungicides are often uneconomic. Disease control is dependent on agronomic measures such as delayed sowing and wide rotations.

The Pathogen: *Phoma koolunga* was first described by Davidson *et al* (2009) in South Australia, and causes typical ascochyta blight symptoms on field peas.

On malt agar the colony has white to pale gray aerial mycelium, or is occasionally dark olivaceous with little or no aerial mycelium, reverse yellow-brown to olivaceous. Pycnidia (150–210 μm diameter) are scattered over the agar or immersed. Conidia are hyaline, ellipsoidal to oblong, 12.5–17x 5–7 μm , mostly aseptate. Chlamydospores are absent but pseudo-sclerotia may be present, formed in radiating lines.

The comparatively large size of the conidia of *P. koolunga*, their aseptate nature and the cultural growth distinguishes the pathogen from the other causal agents of ascochyta blight on field peas i.e. *Mycosphaerella pinodes*, *Phoma medicaginis* var. *pinodella* and *Ascochyta pisi*. No teleomorph of *P. koolunga* has been identified.

Distribution: *Phoma koolunga* has been detected in the pea growing areas of Australia, particularly in South Australia.

Host Range: Field peas (*Pisum sativum*) are the major host while in glasshouse conditions symptoms can be produced on some cultivars of *Medicago littoralis*, *M. scutella* and *Lens culinaris*.

Impact: *P. koolunga* has been associated with severe ascochyta blight symptoms in naturally infected peas in the field. In glasshouse inoculated trials the symptoms are indistinguishable from those caused by *M. pinodes*. All the causal agents of ascochyta blight on field peas can usually be detected within one paddock and are often all present on individual plants. Yield losses in severe epidemics can be as high as 50%, while it has been estimated that each year the Australian pea crop loses an average of 10% production due to this disease. *P. koolunga* is able to survive in the soil, probably in the form of pseudosclerotia or directly on stubble. This implies the pathogen will be more prominent in the disease complex where pea crops are grown in short rotations.

Detection and control: Diagnosis includes cultural morphology and specific PCR primers based on the ITS region. Control options are limited and involve crop management, particularly wide rotations between pea crops to reduce soil-borne inoculum.

Further Reading: Davidson, J.A., Hartley, D., Priest, M., Krysinska-Kaczmarek, M., Herdina, McKay, A. and Scott, E.S. (2009) A new species of *Phoma* causes ascochyta blight symptoms on field peas (*Pisum sativum*) in South Australia. *Mycologia*, 101(1): 120-128..

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