

# Practical Disease Management Issues In Pulse Crops

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## Field Peas

### *Ascochyta blight*

Disease carry over in the soil and stubble is the major cause of ascochyta blight infection in field pea crops. Therefore management involves implementing practices which will minimise its impact. These practices will reduce potential infection from 20-45% (high yield loss situation) down to 0-15% (nil-low yield loss situation). Some level of ascochyta blight is often present in field peas as all varieties are susceptible.

The key management practices to follow are: 1. Crop rotation (up to four year break is best), 2. Avoidance of very early sowing and 3. Use a seed dressing containing thiabendazole and thiram. Use of seed dressing is economic in most years in the Wimmera, Mallee and central Victoria. The exception will be in a season which has very wet spring conditions.

Other practices which can be helpful are: 1. Destroying old pea trash, 2. Controlling self-sown peas and 3. Using disease-free seed (seed test available). Seed which is infected with ascochyta blight (% infection worse in late harvested crops) has a poorer emergence %, will establish the disease in a clean area and can cause a greater amount of disease (foot rot in particular) in the crop.

### *Downy mildew*

Downy mildew is most common in a year when above average winter rainfall occurs, such as in 1995. The disease is usually only severe in winter and it makes the crop very vulnerable to herbicide damage.

Seed harvested from a crop infected with downy mildew should have a seed dressing applied if it is to be used for sowing.

Outbreaks of this disease are likely to be irregular however destroying infected pea trash and extending the crop rotation will help reduce potential disease levels for future pea crops.

### *Bacterial blight*

Outbreaks of bacterial blight in field peas are irregular however when it occurs losses can be high. It is more common in wet seasons. One or a combination of factors can cause this disease to escalate. These may include diseased seed, infected stubble or crop damage (eg. frost, hail, heavy rain, herbicide). The key management practices are: 1. Crop rotation and 2. Using disease-free seed (seed test available).

## Chickpeas

### *Sclerotinia*

Use of disease-free seed (seed test available) minimises the risk of disease and prevents it being established in a new area. It is important to avoid sowing chickpea on areas where the disease is known to be present.

Crop rotation is the best method of control once the disease has become established. Cereal crops are not affected by sclerotinia and provide a good disease break (Table 1). Pulse crops, oilseeds, legume based pastures and capeweed are all good hosts to this disease.

If a severe sclerotinia problem does occur, a four year break from disease hosts is required to substantially reduce the number of sclerotia in the soil. A more practical option is to use cereals and those legumes which may only receive minor disease infection in those four years. In addition burning of the disease infected stubble should be considered. Deep ploughing (over 2 inches) will also reduce the number of sclerotia, and so minimise disease carry over.

Where a minor sclerotinia problem occurs, a two year break from disease hosts is advisable.

The seed harvested from infected crops should not be used for sowing. No commercial seed treatments or fungicides are known to manage this disease in crop.

**Table 1. Crops which can be affected by sclerotinia**

Crop	Sclerotinia	
	<i>Potential Severity Of Disease On Crop</i>	<i>Disease Host</i>
<b>Wheat</b>	None	No
<b>Barley</b>	None	No
<b>Oats</b>	None	No
<b>Canola</b>	Moderate-Severe	Yes
<b>Safflower</b>	Moderate	Yes
<b>Sunflower</b>	Severe	Yes
<b>Linola</b>	Moderate	Yes
<b>Field Pea</b>	Minor	Yes
<b>Chickpea</b>	Moderate-Severe	Yes
<b>Faba Bean</b>	Minor	Yes
<b>Lupin</b>	Moderate	Yes
<b>Lentil</b>	Moderate	Yes
<b>Vetch</b>	Minor	Yes
<b>Legume Pasture</b>	Minor	Yes

### ***Phoma***

The use of disease free seed (seed test available) and crop rotation will help prevent the establishment and build-up of this disease.

Where chickpeas have been badly infected a two year break from host crops will minimise the disease risk. Crops which host phoma are field pea, chickpea, faba bean, lupin, lentil, vetch and legume pasture species. Cereal and oilseeds crops provide a good disease break.

Seed-borne disease infection can be controlled with fungicide seed dressings. No fungicides are known to manage this disease in crop.

### ***Botrytis grey mould***

Grey mould has been the most serious disease of chickpeas in Victoria. It is most common in a wetter than average spring and will cause loss of grain yield and quality. Subsequent use of seed infected with grey mould will cause pre-emergence seed rotting.

Options available to growers to help reduce the impact of this disease are: 1. Avoid susceptible varieties (Kabuli types and T1414 are more susceptible) and 2. Avoid sowing crops too thick, wider row spacings will help crops dry after heavy rain.

To prevent pre-emergence seed rotting from grey mould: 1. Use disease free seed (seed test available) or 2. Use seed dressing (particularly if inoculating seed with chickpea rhizobia). Seed dressings and chickpea rhizobia inoculants should not be mixed together. The seed dressing should be applied first and the rhizobia inoculant applied later, just prior to sowing. However, chickpea inoculants are not necessary for up to 8 years after a successfully nodulated chickpea crop has been grown in Wimmera soils.

### ***Pythium***

*Pythium* is mainly a problem of kabuli chickpeas. It is a soil borne disease which effects the crop at emergence. The key management practice is: 1. Seed dressing and 2. Avoid susceptible varieties. Other practices which are helpful are: 1. Avoid poorly drained soil and 2. Crop rotation.

## **Faba Beans**

### ***Ascochyta blight***

Ascochyta blight in faba beans is common in most seasons and when left uncontrolled generally causes 5-20% yield losses. The major source of disease carry over is from soil and stubble. Widespread use of a foliar fungicide spray treatment 6-8 weeks after crop emergence has been the major strategy to reduce potential infection and therefore minimise crop losses. Other practices which will help reduce disease carry over levels are crop rotation, destroying faba bean stubble, controlling self-sown beans and using clean seed.

The new variety Ascot (available 1996) is a good option for Wimmera growers as it has tolerance of ascochyta blight. Ascot growers will save on one fungicide treatment, will have less stem damage on the crop and grain quality is better compared to Fiord. The yield of Ascot compared to Fiord is similar in the Wimmera but has been about 10-20% lower in irrigation areas and in the Mallee.

## **Lupins**

### ***Pleiochaeta root rot and brown leaf spot***

*Pleiochaeta* root rot (PRR) and brown leaf spot (BLS) are one of the most common disease problems of lupins. Crops grown in wet areas and/or on heavier textured soils are at most risk of being infected by these diseases. Soil and infected stubble are the major causes of disease carry over. The fungus mainly survives in the soil surface (causing PRR) and rain splash spreads the fungus onto leaves, causing BLS.

Management practices which reduce the impact of this disease are: 1. Crop rotation (up to four year break may be needed), 2. Seed dressing, 3. Stubble retention and avoid thin stands, 4. Sow deeper than 3cm (PRR control) and 5. Grow a BLS resistant variety (Myallie: available 1996).

## **Lentils**

### ***Ascochyta blight***

Ascochyta blight is the most serious disease threat to the lentil industry, particularly to the quality of grain produced. This threat will be minimised by carrying out practices which prevent the disease establishing in new growing areas and/or preventing disease levels building up in the soil.

The best management practices are: 1. Crop rotation, 2. Avoid early sowing, 3. Use disease free seed (seed test available) and 4. Use a seed dressing. Use of disease free seed will prevent the disease establishing in new growing areas.

The variety Northfield has resistance to ascochyta blight infection on the seed but it will develop ascochyta blight on the foliage at similar levels as other current varieties.

### ***Where to get seed tested***

The Field Crops Pathology Unit in Adelaide do commercial seed tests for pulse crops which includes ascochyta blight in field peas, faba beans and lentils; *Botrytis* grey mould, sclerotinia and *Phoma* in chickpeas, bacterial blight of field peas and cucumber mosaic virus of lupins. They require a 1kg seed sample per 20t of seed which can be sent to SARDI Field Crops Pathology, Plant Research Centre, Hartley Grove, Urrbrae, SA 5064. Enquiries can be directed to Russell Cook on (08) 303 9384.