Sowing pulses on pulses increases the risk of crop failure in seasons favourable for disease development.

Drought conditions throughout the Mallee and Wimmera last year (2002) resulted in poor growth in most pulse crops, with many crops failing. It is very tempting to re-sow paddocks to the same crop or another pulse in 2003. However, there are several disease management issues growers should be aware of before deciding to replant on pulses.

Many of the common diseases of pulse crops can survive quite well in dry years. Old stubble residues can harbour many foliar diseases such as:

- the *ascochyta* diseases of chickpea, lentil, field pea and faba bean, and
- *botrytis* diseases such as grey mould of lentil and chickpea, and chocolate spot of faba bean.

Several common diseases can also survive in the soil in the absence of stubble residue, these include:

- Phoma stem blight, this can infect both field pea and chickpea
- Downy mildew of field pea
- *Botrytis fabae*, which causes chocolate spot in faba bean and grey mould in lentil
- Sclerotinia

Root rot pathogens such as *Phytophthora* and *Pythium* can also survive under dry conditions but are strongly dependent on soil moisture to become active. Generally these pathogens are always present in the soil at low levels and cause damage to plants under very wet conditions.

Sowing a pulse crop on a failed pulse could expose the new crop to high or potentially high levels of inoculum. The basis of crop rotation to manage disease is to allow inoculum levels to decrease in a paddock using non-host crops before sowing with another pulse crop, generally this period is two or three years. The risk of high disease pressure in the following pulse crop will be largely dependent on the pulse crop sown, the prevailing weather conditions (generally the more moisture present, the higher the disease risk) and inoculum level.

However, looking at the possible disease threats, and making some simple judgements can reduce the risk of crop losses. The following table presents the most important diseases for each pulse crop and the threat each disease can pose to the following pulse crop.

2002 Pulse	2003 Pulse Crop					
Сгор	Field pea	Lentil	Faba bean	Chickpea		
Field pea	Ascochyta (Blackspot) **** Sclerotinia ** Downy mildew *** Powdery mildew ***	Phoma ×× Sclerotinia ××	Ascochyta blight ××	Sclerotinia ×		
Lentil	Phoma ×× Sclerotinia ××	Ascochyta **** Grey Mould **** Sclerotinia **	Chocolate spot *** Sclerotinia *	Botrytis grey mould *** Sclerotinia **		
Faba bean	Mycosphaerella pinodes ×× Sclerotinia ××	Grey Mould ×××× Sclerotinia ××	Ascochyta ×××× Chocolate spot ×××× Sclerotinia ×	Sclerotinia ×		
Chickpea	Sclerotinia ×× Phoma ××	Grey mould *** Sclerotinia **	Sclerotinia ×	Ascochyta blight **** Grey mould *** Sclerotinia ** Phoma ***		

The number of crosses (\mathbf{x}) indicates the risk of crop damage, eg **\mathbf{x} \mathbf{x} \mathbf{x}** high, \mathbf{x} low

Disease Pathogens Ascochyta blight Ascochyta rabiei (chickpeas), Ascochyta (Blackspot) Ascochyta pisi (field peas), Phoma medicaginis, & Mycosphaerella pinodes Ascochyta Ascochyta lentis (lentil) Ascochyta Ascochyta fabae (faba bean) Botrytis cinerea & Botrytis fabae Grey Mould Chocolate spot Botrytis fabae Phoma medicaginis Phoma Sclerotinia Sclerotinia sclerotiorium

Recommendations

To avoid damage by disease in the following pulse crop the following points are recommended :

1. Do not sow the same pulse crop species in the same paddock. From the table above it is seen that the disease risks are too high. Even if the season has been dry, sufficient levels of inoculum can survive and quickly reproduce early in the season to cause problems. Select pulse crops that pose the lowest disease risk.

2. Use a fungicide seed dressing. This will protect from early infection by root rot pathogens and allow healthy seedling establishment.

3. Where possible, either graze or burn stubble residue before cropping. This should be done late in the season so as not to leave the paddock in a bare state over summer. Removal of stubble residue prior to sowing will reduce inoculum levels for the following pulse crop.

4. Be aware of self-sown plants that could emerge in the following pulse crop. Dun-type field peas have a degree of hard seed and lentils are often a problem due to the large numbers of small seed. Self-sown plants can act as a source of inoculum in the following pulse crop. These plants can also contaminate seed if allowed to grow through to maturity. Growers should be aware of the difficultly of grading out some pulse seeds and possible downgrading of seed due to contamination.

5. **Do not** be tempted into letting self-sown plants establish as a substitute crop, this represents a high disease risk situation. Plants often emerge early and in large numbers creating a perfect environment for disease establishment and most likely the crop will fail by the end of winter due to high disease pressure.

2002 Crop	Best 🗲	2003 Crop Option		→ Worst
Field Pea	Faba bean	Lentil	Chickpea	Field Pea
Faba Bean	Chickpea	Field Pea	Lentil	Faba bean
Chickpea	Field Pea	Faba bean	Lentil	Chickpea
Lentil	Field Pea	Chickpea	Faba bean	Lentil