



Bacterial Blight of Field Peas

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*Bacterial blight is a serious disease of peas which can be controlled by crop rotation, time of sowing, farm hygiene and use of disease free seed. Bacterial blight is caused by the pathogens *Pseudomonas syringae* pv. *psidi* and/or *P. syringae* pv. *syringae*.*

Symptoms

The disease first becomes evident as small, dark-green, water-soaked lesions on leaves and stipules. The lesions often enlarge and coalesce, but are always delimited by the veins (Figures 1 & 2).

The lesions on the leaflets turn yellowish and later brown and papery, whereas those on the pods are sunken and turn olive-brown.

Lesions may also develop on stems near ground level. These begin as water-soaked areas which later turn olive-green to dark brown. Stem lesions may coalesce, causing the stem to shrivel and die.

Stem infection may spread upwards to the stipules and leaflets. In this case, a fan-like lesion is formed on the stipule. Affected veins become brown-black and leaf tissue yellowish to brown with a papery texture when dry.

Pre-emergence and post-emergence damping-off may occur and even advanced plants may be killed. Heavily infected seed may be discoloured, but light infection has no visible effect on seed.

The symptoms of *Pseudomonas syringae* pv. *psidi* and *Pseudomonas syringae* pv. *syringae* are indistinguishable.



Figure 1. Water soaked lesion, caused by bacterial blight, spreading into the leaf from the base.



Figure 2. Leaf lesions caused by bacterial blight.

Economic importance

Bacterial blight is widespread in field peas in Victoria, but its severity varies greatly from crop to crop and between seasons. Severe epidemics can result in crop failure, however, losses are usually less than 20%.

Disease cycle

Bacterial blight is caused by the pathogens *Pseudomonas syringae* pv. *psidi* and/or *P. syringae* pv. *syringae*. These bacteria may either be seedborne or survive in pea trash. The disease commonly becomes established within a field by sowing infected seed. During wet weather, bacteria spread from infected to healthy plants by rainsplash and in wind-borne water droplets. Infection may occur at any stage of plant growth following either rain or heavy dew. Because the disease depends on wet conditions, blight is most severe in wet seasons.

A combination of excessive rainfall and strong winds provides the most favourable conditions for spread of the disease within crops. Plants damaged by frosts and heavy rain are more susceptible to disease.

Management

Bacterial blight can be avoided by using an integrated approach that encompasses planting disease-free seed, crop rotation, variety selection and avoiding early sowing.

Use of disease-free seed

This is the main control measure recommended. The use of clean seed will minimise the possibility of disease provided the land has not been cropped to peas for several years.

Do not use seed from crops identified with bacterial blight during field inspections. A field inspection should occur at mid to late pod fill.

Bacteria remains viable on seed for at least 2 years.

A seed test is available to identify infected seed.

- SARDI Diagnostic Services, Locked Bag 100, Unley Delivery Centre, Unley, SA, 5041, Ph 08 8303 9371.
- AgriQuality Limited, P.O. Box 1335, Tullamarine, Vic. 3043. Ph 03 8318 9000.

Rotations

To obtain a blight-free crop, peas should not be sown on land sown to peas in the previous year or adjacent to pea stubble. Where possible, peas should not be grown on the same land more than once in three years. If disease occurs, the rotation should be extended to once in four years.

Stubble can be a significant source of inoculum. Destroy by burying, baling or burning infected stubble. The survival time of inoculum is significantly reduced by burying pea trash 10 cm below the soil surface.

Time of sowing

Early sown crops are more vulnerable to bacterial blight infection than late sown crops; never sow earlier than recommended for your district. In areas prone to bacterial blight avoid early sowing.

Crop damage

Bacterial blight is often associated with physical crop damage such as hail, frost, strong winds, sand blasting machinery damage. Physical damage enables bacteria to enter the plant tissue.

Minimise the use of post emergence sprays as the severity of bacterial blight can increase if plant tissue is damaged. Avoid paddocks where sulfonyleurea residues may be present.

Varieties

All varieties are susceptible to *Pseudomonas syringae* pv. *pisi*, but the frequency of bacterial blight can be reduced by avoiding varieties susceptible to *Pseudomonas syringae* pv. *syringae* (Table 1).

Table 1: Reaction of varieties to bacterial blight caused by *Pseudomonas syringae* pv. *syringae*

| Variety | Reaction |
|-----------|----------------------|
| Parafield | Resistant |
| Dundale | Resistant |
| Dunwa | Resistant |
| Helena | Resistant |
| Morgan | Resistant |
| Sturt | Moderately Resistant |
| Bundi | Susceptible |
| Kaspa | Very Susceptible |
| Moonlight | Very Susceptible |
| Excell | Very Susceptible |
| Snowpeak | Very Susceptible |

Farm hygiene

When bacterial blight is detected, steps should be taken to prevent the spread of disease. Machinery used in an infected crop should be cleaned thoroughly and washed with disinfectant after use. Likewise, machine operators and farm workers should only move from crop to crop after taking precautions against the spread of bacteria. This is best achieved by wearing rubber boots and waterproof trousers that are washed with disinfectant immediately after leaving an infected field.

Crops should never be inspected when they are wet.

Chemical control

Fungicides are designed to be active against fungal diseases and are ineffective in the control of bacterial diseases like bacterial blight of field pea. There are copper based compounds that are registered for use in field peas for bacterial blight but evidence for their effectiveness in Australian field pea crops is limited and inconclusive. Seed treatments are not effective for the control of bacterial blight.

More information

www.dpi.gov.au (click on Agriculture and Food then Crops and Pastures, Legume crops)

Victorian Winter Crop Summary

Wurst M, Hawthorne W, Nikandrow N, Ramsey M, (2002) *Winter Pulse Disorders: The Ute Guide*.

The previous version of this Information Note was published in April 2004.



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