



Strategies to minimise bacterial blight in field peas

A growers' guide to an integrated approach

Summary

Field peas are a valuable component of winter cropping rotations across southern Australia. In order to maximise the benefits of the pea crop, damage from bacterial blight must be minimised. The bacteria responsible for bacterial blight are present in most pea-growing districts but significant crop damage occurs only sporadically. Severe epidemics may be as infrequent as one year in ten. Epidemics are usually associated with some form of crop damage and favoured by seasonal conditions with high rainfall, hail, strong winds and low temperatures (frosting).

An integrated management approach will help minimise the incidence and severity of bacterial blight in field peas. These management practices include:

- **paddock selection**
- **source of seed**
- **sowing time**
- **avoiding damage to pea crops from herbicides and machinery movement**
- **proper paddock hygiene**
- **harvest management**
- **burial or removal of pea stubble**



Di Carpenter

An early infection of bacterial blight. The brown watermark begins where the leaf joins the stem then follows the leaf veins, spreading across the leaf as seen here.

Introduction

Field peas are grown as a valuable component of winter crop rotations and can increase cereal and canola yields by providing a disease break and maintaining or improving the level of soil nitrogen. To maximise these benefits, bacterial blight in field peas must be managed. The bacteria responsible for bacterial blight can survive on pea crops without causing any disease symptoms or crop loss. If conditions are suitable for the development of the disease, however, symptoms can rapidly appear in the crop and in extreme cases, significant yield loss can result. On average, severe epidemics occur once in ten years and can cause some crops to fail completely. In the 1992 epidemic, yield losses from bacterial blight were estimated at 10% of the Australian field pea crop. The conditions favouring disease development are closely associated with wet weather and physical crop damage resulting from hail, wind, sand blasting or vehicle/machinery/animal movement. The way these factors interact to produce an epidemic, however, is not fully understood.

BEST MANAGEMENT PRACTICE

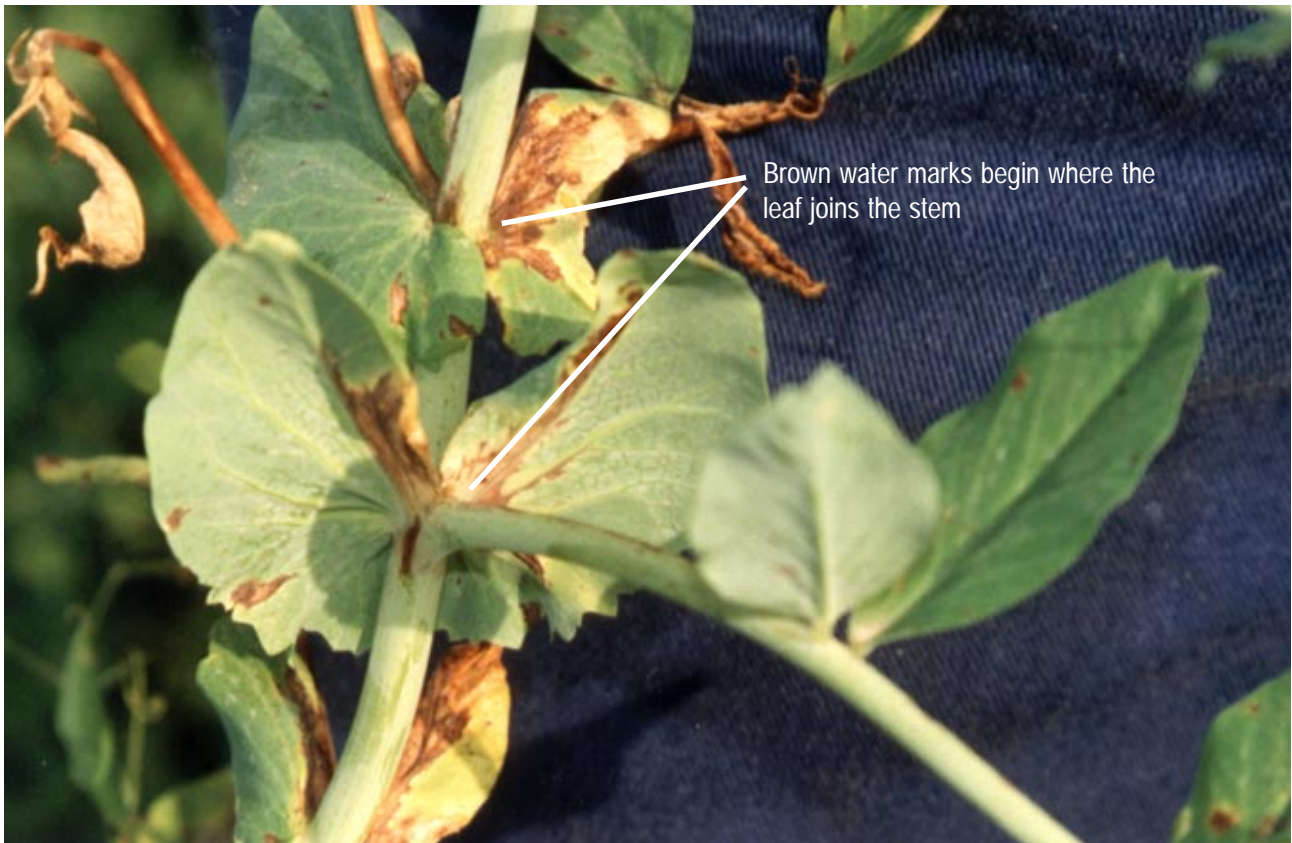
Field pea growers can reduce the incidence and severity of bacterial blight by implementing the management practices outlined below.

Paddock selection

- A break of at least 4 years between field pea crops.
- Do not sow adjacent to field pea stubble, particularly downwind.
- Paddocks need to be suited to late sowing (good soil structure & drainage).
- Avoid paddocks prone to frost. Bacterial blight acts as an ice-nucleating agent, whereby plant tissues freeze sooner than normal. Bacterial blight infected crops are more likely to suffer increased tissue damage from frost.
- Select paddocks with low weed pressure to minimise herbicide usage to pre-emergent or early post-emergent spraying.

Seed

- Bacterial blight can be introduced by sowing contaminated seed.
- Do not use seed from crops identified with bacterial blight during field inspection. A field inspection should occur at mid-flowering to late pod fill. The field inspection will not control or





Eric Armstrong

Bacterial blight symptoms (above and facing page). Brown watermarks follow the leaf veins and spread across the leaf and along the stem.

eliminate bacterial blight but will help to identify very badly infected seed and enable growers to avoid sowing it in the following year.

- The bacteria remains viable on seed for at least 2 years.
- Choice of variety is not part of the current strategy to control bacterial blight, as current varieties do not vary greatly in their susceptibility.
- A seed test is available to identify infected seed (refer to section Seed Test).
- If purchasing seed, ask for a Bacterial Blight Field Inspection Report.
- Seed dressings are not effective against bacterial blight

Sowing time

- Early sown crops are more vulnerable to bacterial blight infection than late sown crops; never sow earlier than recommended for your district.
- To reduce the likelihood of bacterial blight, sow at the later end of the recommended window for your district.

Crop damage

- Bacterial blight is often associated with physical damage to the crop.
- Physical damage enables bacteria to enter plant tissue.
- Frost, hail, strong winds, sand blasting and machinery can damage crops.
- Be aware that both domestic and feral animals can cause crop damage. Don't allow farm dogs to wander through crops.

- Bacterial blight severity can increase if plant tissue is damaged by herbicides so minimise the use of post-emergent sprays and avoid paddocks where sulfonylurea residues may be present.
- Avoid spraying or travelling in the paddock when rain is imminent as disease is more likely on freshly damaged and/or wet foliage.
- Controlled traffic will minimise damage by machinery. It will also allow a pathway for inspection (as long as pathways are wide enough to allow for field pea lodging).

In-crop hygiene

- Bacterial blight can be spread by equipment.
- If bacterial blight infection is known, wash spraying equipment between paddocks with a high-pressure wash with disinfectant. This also applies to all other vehicles/machinery that enter field pea paddocks.
- Disinfectants should consist of 20% bleach or 70% methylated spirits.
- Crops should never be inspected when they are wet.
- Machine operators and farm workers should wear boots or waterproof trousers and wash them with disinfectant after leaving an infected paddock.
- Control volunteer peas in other crops.

Harvest

- Choose disease-free areas of your crop for seed and harvest this first.
- Dust originating from harvest, storage, handling and grading of bacterial blight infected crops can spread the disease to uninfected seed lots.

Stubble

- Stubble can be a potent source of inoculum.
- Bacterial blight can survive on stubble on the soil surface.
- Infected stubble and bacteria can be carried between paddocks by wind or grazing stock over summer.
- The survival time is significantly reduced by burying the stubble. In one field trial, survival of bacterial blight on stubble was reduced from 2 years to 11 months by burying pea trash 10 cm below the surface.
- Bury/destroy/bale/burn infected crop residues (stubble)

SEED TEST

A bacterial blight seed test is available and can be used to identify contaminated seed. Growers who wish to retain their seed in high-risk regions i.e. high rainfall, hail, strong wind, frost prone, with a history of bacterial blight, can utilise the seed test as an additional strategy to combat bacterial blight.

- The sensitivity of the test has been set at less than 0.05% i.e. 1 infected seed per 3000 seeds.
- This means low levels of bacteria can still remain undetected in seed and if conditions are conducive, the disease can still appear.
- The seed test does not guarantee a disease-free crop. Crops established with tested seed in which bacteria have not been detected, however, will produce less infected seed.
- Seed with a positive test should not be sown in high-risk growing environments.

A bacterial blight testing service is available from:

SARDI Diagnostic Services

Locked Bag 100
Unley Delivery Centre
Unley, South Australia, 5041
Ph: 08 8303 9371

AgriFood Technology

260 Princes Highway
PO Box 728
Werribee, Victoria, 3030
Ph: 03 9742 0555



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CONCLUSION

A range of options are available to manage bacterial blight in field peas. An integrated approach of agronomic management will minimise the damage of bacterial blight in field peas and maximise the value of the crop.



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Pulse Points are available on the NSW Agriculture web site:
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DISCLAIMER

The information contained in this publication is based on knowledge and understanding at the time of writing in April 2001. However, because of advances in knowledge, users are reminded of the need to ensure that information upon which they rely is up-to-date and to check currency of the information with the appropriate officer of New South Wales Department of Agriculture or the user's independent adviser.

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