

Bacterial blight in field pea

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Key findings

Prevention of bacterial blight (BB):

- In frost prone areas, sow field pea varieties that have some resistance against BB
- Use seed that was harvested from a crop that was free of BB
- Do not apply herbicides to the crop if there is a risk of frost as this can increase the risk of BB

If bacterial blight infects a crop:

- Do not drive over the paddock as bacteria will spread on wheels of vehicle
- Harvest the infected pea crop after uninfected crops, to prevent spread of bacteria through the harvester to other pea seed
- Do not spread stubble or hay from the infected crop to other paddocks as bacteria will survive in the stubble
- Do not keep pea seed for next years' crop
- No sprays or seed dressings can control BB effectively

What is it?

This disease is very sporadic and often unpredictable. It is caused by the bacterium *Pseudomonas syringae* consisting of two pathovars (pv), *P. syringae* pv *psisi* and *P. syringae* pv *syringae*. Frost damage followed by wind and frequent rain encourages the development and spread of the disease. This highly infectious disease can be easily spread by movement through the crop of machinery, people and animals.

How does it spread and how can we reduce the risk?

P. syringae survives on both seed and infected plant material and these two sources are the main means of transmission of the disease to new crops. Therefore, seed harvested from infected crops should not be used for sowing. Infected crops should be harvested last of all pea crops on the property, to prevent infected stubble in the harvester moving over the property and to prevent small pieces of infected stubble remaining in the header and infecting other pea seed. Likewise, movement of pea stubble from these crops should be closely monitored, particularly when baled for hay as this is a ready source of infective bacteria. Also be aware that crops having no obvious signs of disease may still carry the bacteria at low levels.

Bacterial blight will often develop in frost prone, low lying areas first. Be aware that frost events can trigger development of this disease and check these areas first for symptoms. Avoid sowing field pea crops in paddocks prone to frequent frost events.

Operations favouring rapid breakdown of pea trash can greatly reduce the length of survival of the bacterium. Control of volunteer pea plants is equally important for control of this disease between seasons. Survival can be up to three years on seed in storage.

Which varieties have better tolerance?

Field pea variety screening for bacterial blight is regularly undertaken at Wagga Wagga in NSW for the Pulse Breeding Australia – Field Pea Breeding Program. The varieties PBA Oura and PBA Percy were released in October 2011 with significantly improved resistance to *Pseudomonas*

syringae pv *syringae*. In the older varieties, Morgan, Parafield, Sturt and Yarrum display the best field tolerance.

Field pea varietal resistance categories for bacterial blight

Variety	Bacterial blight
PBA Percy	MR
PBA Hayman* (*Forage type)	MR
PBA Oura	MS-MR
Morgan	MS
Parafield	MS
PBA Pearl	MS
Sturt	MS
Kaspa	S
PBA Gunyah	S
PBA Twilight	S
Excell	S
Maki	S
SW Celine	S
Walana	S
Yarrum	S

Where was it seen locally in 2012?

In 2012 agronomists first reported bacterial blight on field peas in late September near Hart, Burra and Jamestown in PBA Oura, PBA Percy and Kaspa crops; in some cases with large patches in the paddock. Both PBA Oura and PBA Percy can develop symptoms as patches but the disease does not spread as much as in Kaspa.

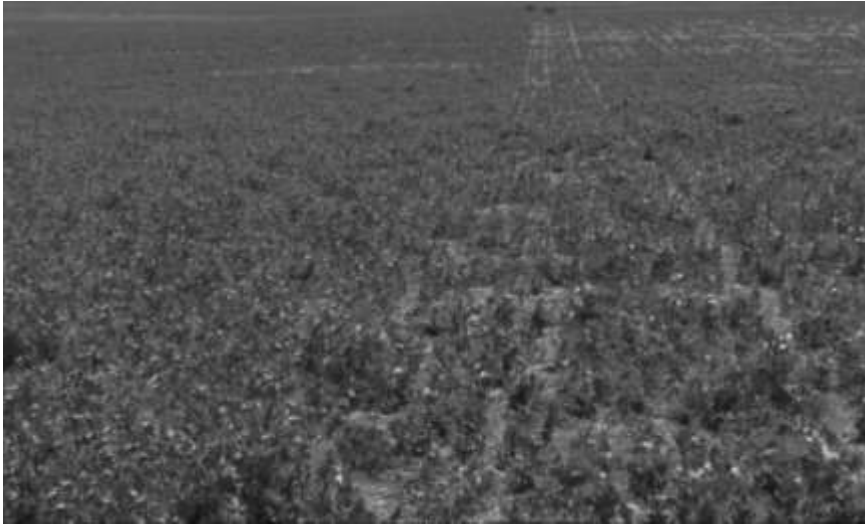
Agronomists observed a crop of PBA Oura peas near Black Springs planted next to Kaspa and both were very badly affected in late September. Most of the PBA Oura plants had disease symptoms, and there were patches within the crop the size of a card table where the peas were only 6 inches high. Initially it was very difficult to see any difference in disease levels between the two crops but a couple of weeks later the PBA Oura peas had 'grown away' from the disease compared to the Kaspa. Another infected crop of Kaspa in the Jamestown region was adjacent to PBA Percy. The Kaspa was not reaped, while Percy lost about 30% of yield. It is possible that the proximity to the diseased Kaspa crop increased the level of infection in the crop of PBA Percy.

Plant samples from these crops were sent to DPI Vic and *Pseudomonas syringae* pv *syringae* was isolated; this was consistent with the Victorian bacterial blight samples in 2012.

In one of the crops agronomists noted the timing of the appearance of bacterial blight followed a grass herbicide application. The herbicide applications could be implicated through damage of the crop by running over plants. This would lead to bacterial blight hotspots appearing in wheel tracks. Alternatively a wetter may prolong droplet formation on leaves and stems, which may interact with frost events and exacerbate freezing injury.

Reference

Armstrong et al (2012) Field Pea Disease Guide in NSW Winter Crop Variety sowing guide, pp90-98.



Bacterial blight in Kasper peas (right) and PBA Ora (left).



Bacterial blight in Kasper peas (Left) and PBA Percy (Right)