

## Minimising bacterial blight in field peas

Trevor Bray, Pulse Australia, South-East (0428 606 886)

### Key Points

The risk of bacterial blight infection in field peas can be reduced by these key management factors.

- **Eliminate sources** most likely for blight infection (seed, pea stubble, weeds)
- **Select paddocks** in less frost prone areas, and avoid the poorly drained heavier soil types. Heavy cereal stubbles can increase disease spread, and risk of crop damage from frost.
- **Manage the crop** to avoid “physical damage” that can increase disease susceptibility. Be aware of frost periods and the timing of crop management practices.
- **Variety choice** is very important in high incidence areas and high-risk situations. Resistance ratings have been established for the Bacterial Blight strain (*P. syringae* pv. *syringae*), the more common strain.
- **Delay sowing** as greater exposure to frost events followed by prolonged wet conditions could increase the incidence and spread of the disease.

Bacterial blight in field peas has occurred sporadically over much of south-eastern Australia in recent years. While there is no cure once a crop has become infected, the risk of getting the disease and damage can be greatly reduced through variety choice, minimising the inoculum source and good management practices. Crops damaged by frost, wind abrasion, hail, wheel tracks, herbicides, water logging etc. are more susceptible to bacterial blight infection. Early infection combined with prolonged wet, cold, and windy conditions that favour disease spread can greatly increase the severity of damage.

### There are two types of bacterial blight.

(*Pseudomonas syringae* pv *syringae*) has a wide host range and is more wide-spread, but the other (*Pseudomonas syringae* pv *pisi*) is specific to field peas. Both are seed-borne.

### Choose the best variety and seed source:

Closely inspect the crop area to be harvested for seed regularly and do not sow seed harvested from bacterial blight infected crops. A seed test is available from AsureQuality  
3-5 Lillie Crescent (PO Box 1335)  
Tullamarine Vic 3043 Tel: (03) 8318 9024.

Screening trials conducted at DI&I Wagga Wagga and DPI Horsham have shown differences in susceptibility of commercial varieties for *P. syringae* pv. *syringae*. Morgan, rated as MR (moderately resistant), followed by Parafield, Yarrum and Sturt as MR/MS (moderately susceptible) are the recommended varieties for higher disease risk areas. Kasper, SW Celine, Bundi, Snowpeak and Excell are rated as S (susceptible). Note that all pea varieties are susceptible to pv *pisi*.

### Carefully select paddocks:

A four year interval between pea crops should be observed and do not sow adjacent to last year's pea stubble. Control pea volunteers and pasture legumes, wild tares/vetch in or adjacent to a pea crop as they can also be a host for bacterial blight pv

*syringae*. Avoid paddocks or large areas that are more frost prone and heavier soil types that are poor draining and stay wet for extended periods.

### Delay sowing:

Early sowing can increase the likelihood of an early infection from a higher frost incidence and prolonged wet, cold conditions that can lead to rapid multiplication and spread of disease. Sow towards the end of the recommended sowing window in high incidence areas.



Bacterial blight symptoms. Photos J. Brand (DPI Vic.)

### Avoid other sources of infection:

Ideally, burn, remove as hay or plough in the previous year's pea stubble. Pea hay/straw can become a source of infection when fed out. Ensure that pea seed harvested or cleaned by a contractor is not contaminated from any previous use on blight infected peas.

Be aware of infection or spread from people, animals and machines entering your pea crop. Contractors (ground spraying, rolling, sowing etc) can also introduce or spread the disease. Weeds sprayed with a knock down before sowing could be a source of bacterial blight infection (particularly medic, clover, vetch, tares), even though completely dead.

### Avoid physical and chemical crop damage:

Crop damage enables the bacteria to enter the plant tissue and cause an infection. Choose herbicides and timing wisely to avoid damaging the peas, both pre and post emergence. Avoid spraying in frosty weather conditions. Avoid rolling peas too late, particularly post-emergent and avoid excessive trafficking over them, especially when wet. Use controlled traffic or plan to follow in the same wheel tracks each time.

### Manage the frost risk:

Choose paddocks or areas on your farm that are less prone to frost events to reduce the vulnerability to blight. Avoid any other physical damage or stress to peas during a frost period that makes them more susceptible to bacterial blight infection.

Flattening heavy cereal stubbles may increase frost risk as dry straw can reduce the buffering effects from moist soil surfaces that are slower to cool at night. Peas emerging amongst stubble clumps may also be more susceptible as they are often stressed or suffering from greater herbicide stress.

After rain, heavy flattened stubbles can retain moisture in soil and stubble for extended periods. Standing stubble can shade the soil surface and plants, thus prolonging the damp conditions that can aid in disease multiplication and spread.

### Practices to help minimize frost and disease risk:

- Minimising cereal stubble presence reduces frost and bacterial blight risk. Mulched heavy stubble creates greatest risk. Short standing stubble may give benefits over taller stubble and wider cereal row spacing may also assist.
- Rolling pre-emergent may help preserve surface soil moisture on bare ground or in very low stubble situations, and lessen any frost risk.
- From limited observations, peas sown into standing cereal stubble rows running north-south appeared to have less disease, possibly due to dryer conditions from more direct sunlight and less shadowing.
- Stagger sowing times or sow later in the suggested sowing window for your district.
- Use varieties with least susceptibility, possibly with different flowering dates or maturities, and with better herbicide and disease tolerance to minimise the risk.

### Remedial action:

Some copper-based, foliar products are registered on bacterial blight, but field trials have shown that their application after infection has not been successful. Extra wheel trafficking can increase the spread.

### The Future:

Breeding lines have been identified with superior resistance and tolerance to *pv syringae* during vegetative infection with reduced yield losses (5-15%). Breeding lines OZP0703 & OZP0901 from Pulse Breeding Australia (PBA) have been prioritised and fast tracked for release to hopefully be commercially available in 2012 through AWB Seeds. They are however susceptible to *pv pisi*.



Susceptible field pea (left) alongside Morgan, Wagga 2006. Photo E. Armstrong (DI & I NSW)

### References:

Pulse Point 13, NSW DI & I – [www.dpi.nsw.gov.au](http://www.dpi.nsw.gov.au)

### Acknowledgements:

Jenny Davidson (SARDI), Jason Brand, Helen Richardson (DPI Vic.), Eric Armstrong (D I&I NSW),

### Bacterial blight quick check list:

- Use a correct variety for high risk situations
- Delay sowing in high incidence regions
- Avoid sowing peas in high frost prone areas
- Avoid heavy soils, prone to water logging
- Minimise cereal stubble if able
- Short standing stubble is preferred over tall or heavily mulched stubbles
- Keep a field pea rotation greater than 4 years
- Keep away from last year's pea stubble
- Control broadleaf weeds well before sowing
- Have a known clean area to be kept for seed
- Seed test for both types (*pv's pisi & siringae*)

**DISCLAIMER** - This information has been obtained from sources considered reliable but its accuracy and completeness cannot be guaranteed. No liability or responsibility is accepted for any errors or any negligence, omissions in the content, default or lack of care, or for any loss or damage whatsoever that may arise from actions based on any material contained in this publication. Readers acting on this information do so at their own risk. Past performance is not indicative of future results. We do not endorse or recommend the products of any manufacturer referred to as other products may perform as well or better than those specifically referred to.

### Major projects funded by

**GRDC** Grains Research & Development Corporation

Pulse Australia gratefully acknowledges the valuable financial support from our industry members.

These are listed on our website under the index heading "Members".