

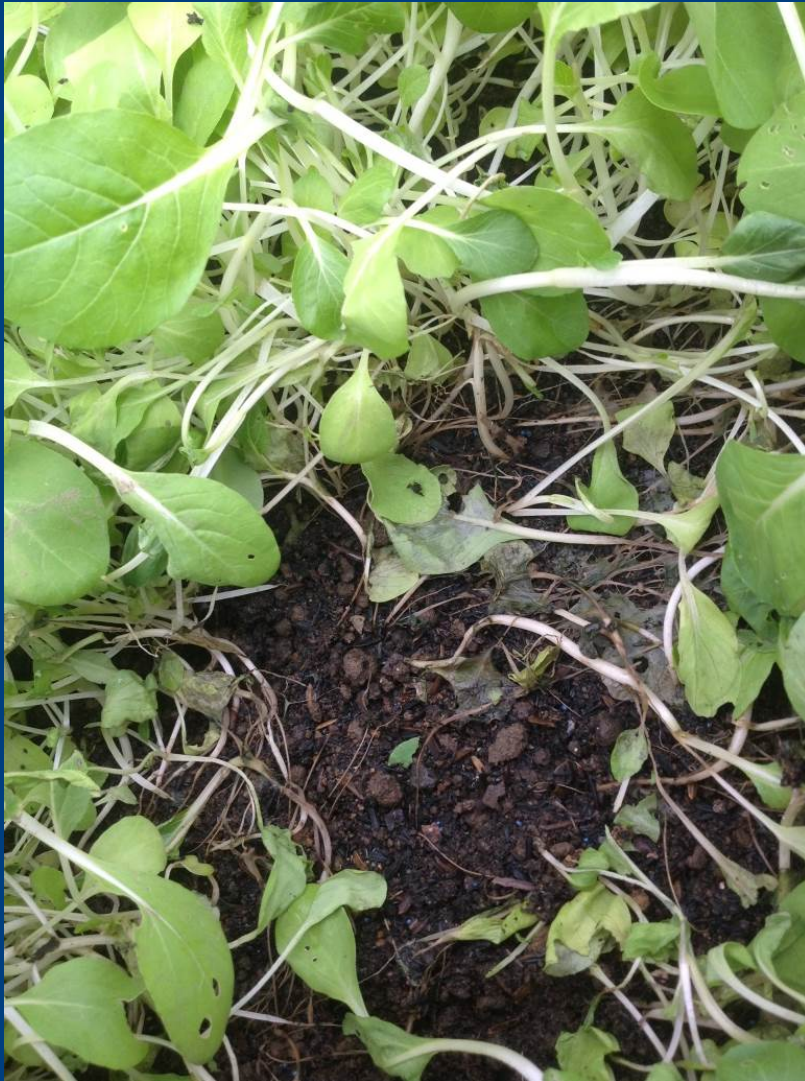


Primary
Industries

Managing key diseases of brassica & lettuce crops

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Seedling damping off – Root rot



- Use quality seed that has been stored in a cool dry place
- Do not use too much nitrogen fertiliser
- Do not over-irrigate
- Apply registered chemicals as directed on the label
- Biological controls help

Bacterial leaf spots



Symptoms of Black Rot

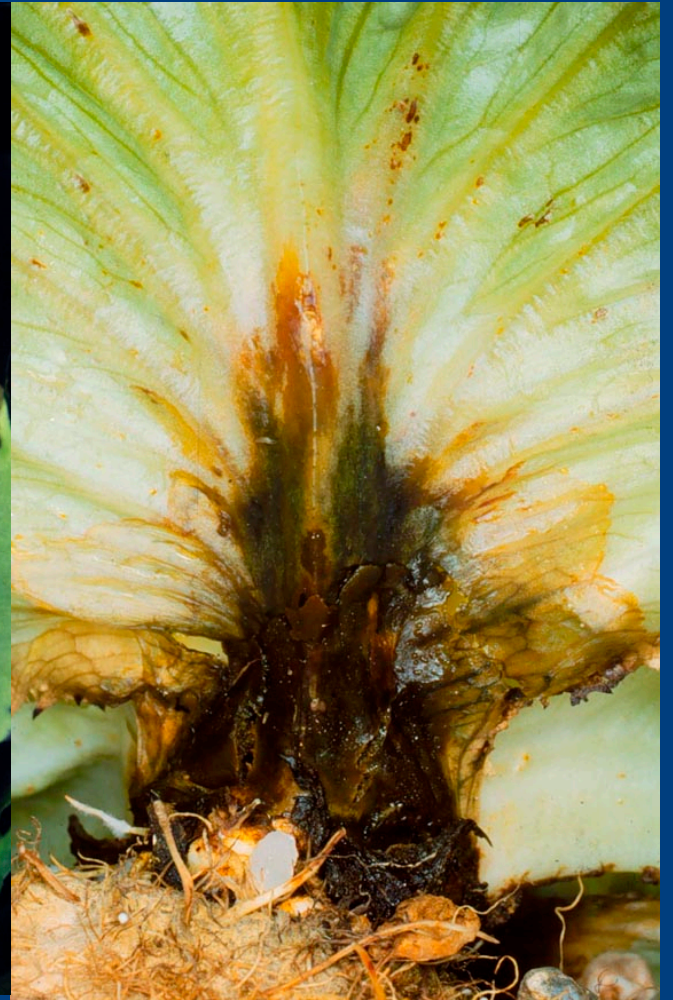


Disease transmission

- Seed-borne
- Infected seeds are not visibly distinguishable
- One infected seed among 10 000 causes field losses
- Easily spread by water splash among seedlings



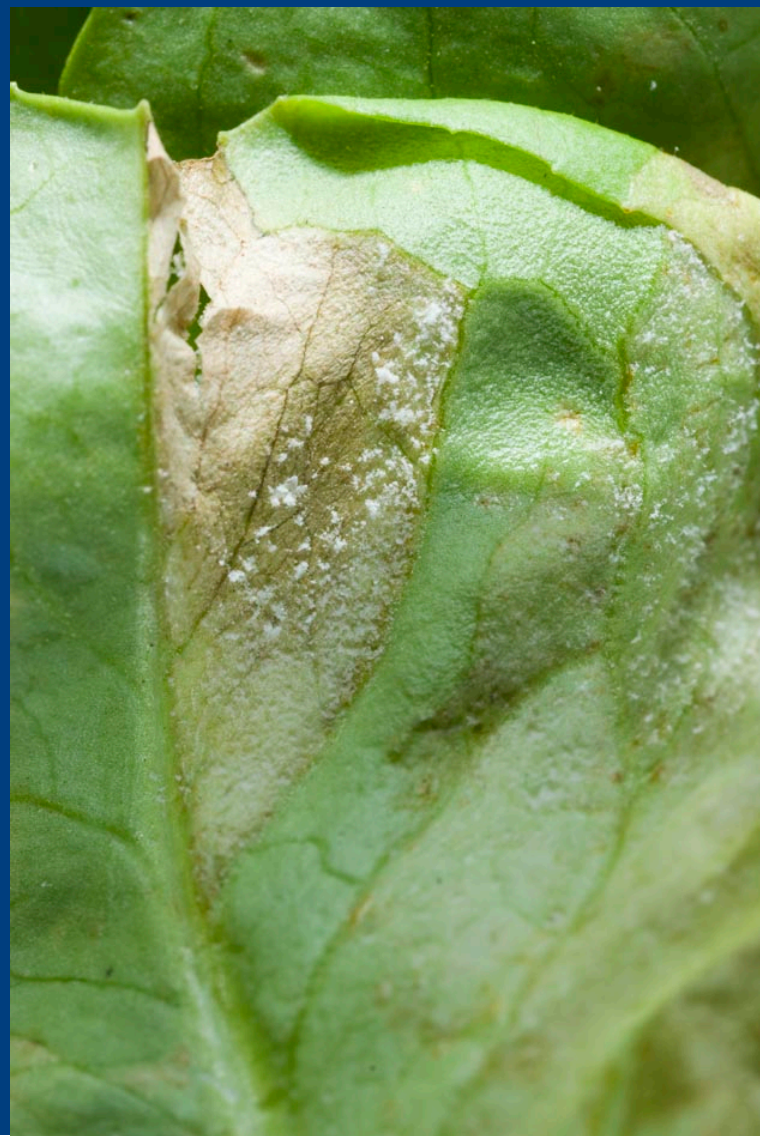
Bacterial rots - lettuce



Downy mildew - brassicas



Downy mildew - lettuce



Alternaria leaf spot



Septoria leaf spot - lettuce



Managing leaf diseases

- Use quality seed – some pathogens can be seed-borne
- Avoid wet leaves – avoid late afternoon irrigation
- Reduce plant density – allow more air to flow across leaves
- Do not use too much nitrogen fertiliser
- Control insect pests of leaves – aphids, thrips etc.
- Use registered fungicides according to label directions

White blister - brassicas

- Apply fungicides as directed on labels
- Rotate chemicals
- Avoid excess water on leaves – do not irrigate late in the afternoon



Club root



- Lime soil to pH7
- Ca cyanamide
- Provide Calcium & Boron supplements
- Drench with fungicide (Shirlan®) at transplanting
- Rotate crops – spring onions

Collapsing plants – cause?



Sclerotinia rot

2 species – sclerotia size



Botrytis rot - hydroponics



Common lettuce viruses



Lettuce necrotic yellows virus



Tomato spotted wilt virus

TSWV can interact with root rot pathogens – plant wilt



Biosecurity threats

Fusarium wilt of lettuce

F. oxysporum f.sp. *lactucae*

- First recorded in Japan, 1967;
- USA: California, 1993, Arizona, 2005;
- Taiwan, 1998;
- Iran, 1999;
- Italy, 2001, more recently in Germany
- Not recorded in Australia – Biosecurity significance (however no formal surveys conducted)

Symptoms of Fusarium wilt of lettuce

- Stunting
- **Leaf yellowing**, sometimes on one side of plant
- Seedlings wilt & die
- Dark brown or red-brown vascular streaking extending from the tap root up the stem
- Tip-burn symptoms in older plants; one-sided
- Butterhead, Batavia and Romaine types are more susceptible
- Higher temperatures favour disease expression
- Maximum growth rate of fungus 25-28°C (8-32°C)

Fusarium wilt in soil and hydroponics



Seedling death



Collapse of maturing plants

Lettuce ring necrosis disease

