

Vegetable ~~Matters of~~ Facts

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Vegetables



Lettuce Downy Mildew (*Bremia lactucae*)

Main control points

Control of Downy Mildew in lettuce crops can be improved by:

- Using downy mildew resistant cultivars when available.
- Using cultural practices, such as:
 - The establishment of a lettuce-free period,
 - Crop rotation,
 - Destruction of possible weed hosts,
 - Increasing space between plants to improve air circulation and reduce humidity,
 - Minimise leaf wetness,
 - Remove all crop debris as soon as harvest is completed,
 - Irrigation management.
- Chemical control with fungicides currently registered for downy mildew control.

Control downy mildew by applying a protectant fungicide before the symptoms appear.

If downy mildew is already in the crop use a systemic fungicide. Restrict the use of systemic fungicides as much as possible to delay development of resistance.

What is Downy Mildew?

Downy mildew occurs worldwide and is a serious fungal disease of field and greenhouse lettuce. Lettuce downy mildew is caused by the fungus *Bremia lactucae*. The disease mostly occurs in spring and autumn. Primarily a foliar disease, lettuce downy mildew has a direct effect on yield and quality. Although yield losses in the field at harvest may be substantial, downy mildew's impact is often manifested by significant postharvest losses that occur during transit or storage.



Lettuce crop infected by Downy Mildew

What does downy mildew look like?

The fungus is capable of infecting and colonizing living host tissue at any lettuce growth stage. Iceberg, loose leaf, and cos lettuce are all susceptible. Downy mildew causes the outer lettuce leaves to develop yellow patches that eventually turn brown. White cottony-like fungal growth, can be seen on the undersides of leaves. Downy mildew develops during wet weather or when there are heavy morning dews on leaves. The disease mostly occurs during spring and autumn.

Downy mildew resistance

One of the major problems controlling downy mildew in lettuce is the break down of resistance in which results in the occurrence of new lettuce downy mildew races (strains). When that occurs plant breeders (seed companies) aim to develop new varieties resistant to the new race to replace existing cultivars

Irrigation Management

Irrigation timing is important and needs to take into account the weather conditions. Irrigation must be managed to minimise leaf wetness. However, good irrigation management is also important to reduce the incidence of tipburn. The ideal irrigation timing differs for disease and tipburn control.

More disease occurs under sprinkler irrigation than trickle irrigation systems. This is due to the longer periods of leaf wetness, increased humidity around the plant and splashing associated with sprinkler irrigation. The use of trickle irrigation can reduce the incidence of downy mildew.

What weather conditions favour infection?

Infection (and sporulation) by downy mildew occurs under conditions of high relative humidity and a wide temperature range 5 to 24°C (the optimum temperature is 20°C). Spore release can start at dawn and reach a peak at 10.00am.

Where does the disease come from?

Infection can be transmitted by: the seed, spores in debris, spores from wild lettuce weeds or from nearby lettuce fields. Once established, spores from diseased lettuce within the crop spread the disease further, helping carry the fungus from season to season.

What are the host plants of downy mildew?

There are 230 plant species that are host of downy mildew, most of those are weeds (like prickly lettuce). Apart from lettuce other vegetables that host downy mildew are globe artichoke, endive and chicory. Wild lettuce (*Lactuca saligna*) is resistant to all downy mildew races and can be considered as a non-host.

How is it spread?

Spores may be spread by wind or rain splash. Windblown spores can travel several kilometres. Spores spread by rainsplash may travel from several centimetres up to a metre.

For more information please contact:

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Also see the brochure "Lettuce - Best production practices" available under lettuce on the website.

Check us out and view our other fact sheets:

<http://www.dpi.vic.gov.au/vegcheque>

For more information please contact your local VegCheque officer.

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