

FACT SHEET

Fusarium Basal Rot in Onions

Fusarium basal rot (FBR) is a plant disease, most commonly caused by the fungal pathogen *Fusarium oxysporum* forma specialis *cepae* (FOC). The pathogen can cause basal rot, damping off and root rot in onions. Bulb rot may become evident in the field or develop in storage, crop losses of above 30% can occur. Fungus living in the soil infects roots or basal plates, with infection occasionally spreading to the lower parts of the bulb scales, infection can occur at any stage of plant growth.

What to look out for

Developing bulbs



- Yellowing of the leaf tips
- Dieback
- Leaves curl down or collapse
- Plant death (severe cases)
- Decay of the roots and basal plate will have occurred by the time above-ground symptoms are visible.

Harvest & Post harvest



- Basal plates may have brown discoloration and soft texture
- White cobweb-like fungal growth may be present around / on basal plate
- Pink to purple discoloration on bulb scales

Factors affecting development and impact of basal rot



Amount of disease inoculum and other diseases in soil



Poor nutrient management (especially nitrogen)



Tolerance of onion variety



Excess or inadequate moisture and poor drainage



Root and basal plate damage, uneven growth



Summer rainfall



Warm soil temperatures (>26°C) during development



Ambient storage

All photos: South Australian Research and Development Institute

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Management of Fusarium basal rot (FBR)

Before planting



Crop rotation

Method: Rotation lengths of four or more years are considered good practice in reducing inoculum concentration. In a paddock with high levels of disease, rotations should be extended.



Biological and chemical controls

Method: Effectively applied fumigation reduces FBR concentration in soil. If fumigation is chosen, replace beneficial soil organisms as soon as possible as reintroduction of pathogens back into fumigated soil can result in higher disease levels. Biological controls that have been shown to reduce FBR incidence include strains of:

- *Trichoderma harzianum*
- *Bacillus subtilis*
- *Funneliformis mosseae*
- *Trichoderma viride*
- *Pseudomonas fluorescens*

In crop



Timing of planting

Method: Infection of seedlings is favoured by warm to hot, moist conditions. Particularly in paddocks that are known to be high risk for FBR, aim to plant when soil temperature is cooler.



Plant nutrition

Method: Avoid applying above optimum levels of nitrogen as onions will become more vulnerable to infection.



Irrigation and drainage

Method: Over-irrigation, under-irrigation and poor drainage favour infection. Manage irrigation and moisture where possible. Drainage improvements, soil amendments and variable rate irrigation should also be considered as part of management.

Scan QR code for access to the Fusarium basal rot guide by Michael Rettke



Credit: Michael Rettke, SARDI

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