

Number 5
July 2003



Horticulture Australia

BUNCHING VEG

Onion White Rot

Main ways to control White Rot:

- Hygiene
- Fungicides
- Reduce irrigation
- Crop rotation
- Plant spacing
- Seasonal soil temperature
- Onion extracts
- Further research



Disease severity : Depends on the number of sclerotia in the soil at planting. As few as one sclerote per 10 kilograms of soil can initiate disease. 10 to 20 sclerotia per kilogram result in infection of essentially all plants. A survey of onion cropping soil near Melbourne found an average of 180 sclerotes/kg dry soil !

What is "white rot"

Onion white rot, *Sclerotium cepivorum*, is the most serious, widespread, and destructive disease affecting the Allium family. Onions, leeks, garlic, chives, shallots and salad onions can all be affected by this soil-borne fungus. Once in the soil, it is extremely difficult to either control or eradicate.

Typical symptoms

- Leaves of plants infected with the white rot pathogen show yellowing, leaf dieback, and wilting. A wet decay of the bulb scales and roots results and the plant can be easily pulled from the ground.
- Associated with the rot is a white cotton-like fungal mycelium, which develops around the base of the bulb. As the disease progresses, the mycelium fills with many tiny black bodies like poppy seeds. These are called sclerotia. The sclerotia are able to survive for at least 15 years in the soil even without a suitable host plant.
- When diseased plants are lifted, sclerotia fall off, then lie dormant in the soil until a plant of the onion family is planted within about 10cm of them. The presence of onion roots stimulates the sclerotia to germinate and infect new plants, starting the cycle of disease once again.

'Stop the rot ! – Managing White Rot in Spring Onions'



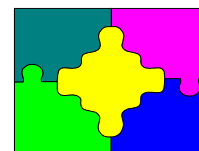
HAL Project : VG 01096

- Onion white rot is caused by the fungus *Sclerotium cepivorum*, the most important soil-borne disease of bulb and bunching onion crops in Australia.
- In south-eastern Australia, disease incidence has progressively increased due to short rotations with non-host crops in intensive production systems.
- Intensive cropping of spring onion production and a reported loss in the effectiveness of Sumisclex® has resulted in large increases of pathogen populations in the soil, high disease levels, and considerable yield losses.
- Research to improve the management of onion white rot will focus on:
 1. evaluating treatments (eg soil amendments, pathogen germination stimulants, solarisation) that decrease the level of disease in the soil.
 2. evaluating effective chemical and alternative control treatments (eg biological controls) that protect the growing root system and suppress the formation of sclerotia on infected plants.

Contact

Dr. Oscar Villalta or Dr. Ian Porter
DPI-Knoxfield, 9210-9222

Main Ways of Controlling White Rot:



- **Hygiene** : Sclerotia can be spread by flood water, equipment, or on plant material, including wind blown scales. Clean equipment before moving from one field to another.
- **Fungicides** : Fungicide resistance testing indicates that procymidone (Sumisclex®) is still effective against white rot. Reports of sporadic failure may be due to non-optimal application and very high disease pressure.
- **Irrigation** : Soil moisture conditions that are favourable for onion growth are also ideal for white rot development. Reducing irrigation will minimise spread but not stop the disease.
- **Crop rotation** : Crop rotation alone will not control white rot because sclerotia can survive more than 20 years in soil, but it does help prevent buildup of the pathogen.
- **Plant Spacing** : White rot can spread 1-2cm when stimulated by nearby plants. Intertwined roots will also transfer infection. Wider spaced plants can be expected to show less spread of disease.
- **Seasonal soil temperature** : White rot develops best when the soil temperature is between 10°-20°C. The disease may be reduced in summer if the soil temperatures exceeds 25°C.
- **Onion extracts or DADS** : Sclerotia germinate only when stimulated by the presence of *Allium* roots. Soil applications of natural or artificial onion extracts can "trick" the sclerotia into germinating and the fungus dies without forming more sclerotia so reducing number of viable sclerotia in the soil.

For more information please contact
your local Veg Cheque officer.

Stephanie Andreato	Gippsland	5172 2133
(Stephanie is leaving us but will be replaced shortly)		
Sally-Ann Henderson	Northern Vic	5051 4500
Bruce Fry	South West Vic	5233 5510
Craig Murdoch	Melbourne	9210 9222

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Useful web links:

General:

<http://www.hdra.org.uk/factsheets/dc16.htm>
<http://ipm.ucdavis.edu/PMG/r584100511.html>

Biocontrol:

<http://www.tiar.tas.edu.au/domino/tiar/tiar.nsf/rdpr13v/V09>
<http://www.rsnz.govt.nz/publish/nzjchs/2000/16.php>

Chemical Control:

<http://www.rsnz.govt.nz/publish/nzjchs/1995/82.php>
http://www.hortnet.co.nz/publications/nzpps/proceedings/99/99_171.pdf

Onion extracts or DADS:

<http://www.dpi.qld.gov.au/aqldtable/5958.html>
<http://pubs.nrc-cnrc.gc.ca/tcjpp/k02-038.html>

Other sites of interest to Onion Growers:

<http://www.colostate.edu/Orgs/VegNet/vegnet/onionlink.html>

Vegetable Matters-of-Facts is published as part of DPI's Veg Cheque extension program.

Editor: Peter Carr, DPI Knoxfield, 03 9210 9222.

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ISSN: 1445-5676