

# Management of pink root rot in onions

Pink root rot in onions is a fungal disease affecting most onion growing regions in Australia, with a wide host range. Farm hygiene is an important strategy to manage the disease.

Pink root rot (*Septophoma terrestris*) is a fungal plant pathogen living on dead or decaying organic matter and plant roots.

### Symptoms

- Symptoms appear 7-21 days after infection, and are more commonly seen in mature plants.
- Roots are initially pink, becoming semi-transparent and water soaked, before turning purple/brown as they wither and die. New roots will also be infected.
- Leaf tips of the plants may dieback showing symptoms similar to nutrient deficiencies, turning yellow/brown at the tip.
- Leaf size and number are reduced, bulbs are unmarketable, plants are easily uprooted.

### Conditions

- Occurs in ground with poor crop rotation
- Waterlogged, poorly drainage, heavy soils
- Optimum temperature for the pathogen is 24°C- 28°C
- Can persist in soil indefinitely, and spread through water movement or dirty equipment.

### Management

*S. terrestris*, like other soilborne diseases can be managed (but not eliminated) by using integrated crop production and protection methods. This aims to reduce pathogen levels in soil, disease pressure and plant stress levels while promoting vigorous plants that can compete with disease pressures.

Although *S. terrestris* is adapted to a wide range of conditions it is most severe in paddocks with poorly draining, heavy soils. Plant stressors such as heat, cold, drought, waterlogging and nutrient deficiencies and toxicities greatly increase disease risk.

Maintaining good farm hygiene practices is vital in reducing the risk of pink root by

cleaning equipment. Remove and destroy infected plants and debris, source clean seed and be vigilant with volunteer seedlings and host plants.

The fungus can be spread by surface water moving infected soil. If infected soil reaches water sources, it can also spread to healthy plants if the water is used for irrigation.

Early detection and monitoring can be done via soil DNA diagnostic testing to understand infection risk before planting. Testing for *Rhizoctonia*, *Fusarium* and *Pythium* should be included in the testing as pink root often forms a disease complex with these pathogens.

Encouraging healthy soil microbes or the application of beneficial microorganisms such as *Trichoderma* spp., and *Bacillus subtilis* may help with disease suppression, however they can only be effective as part of an integrated management approach.

If infection occurs, optimising the irrigation interval to reduce stresses due to water logging has been shown to reduce the impact of pink root on yield. Promoting soil drainage, good soil structure and soil microbes may be beneficial as part of an integrated approach. Fungicides such as chlorothalonil, mancozeb, or copper hydroxide can be used, however chemical control without assessing how and why infection has occurred is only a short-term solution. Fumigation with metam sodium or chloropicrin can also be effective depending on which strains are present, however it may not be economically viable.

### Crop rotations and alternate hosts

Pink root has many alternate hosts so managing weeds is an important strategy in controlling the disease (see Table 1). Crop rotations should be at least six years with non-host crops. It is important to note that adequate crop rotation only reduces disease inoculum rather than eliminating the pathogen.

Planting needs to be appropriate to the variety and season, as onions planted too deeply may have a greater risk of pink root infection. Pink root resistant cultivars are available, however it is important to note the disease strains the variety is resistant to, are based on the growing location. The optimum resistant varieties should be planted in any paddocks with a known history of disease.

TABLE 1

COMMON CROP HOSTS
Barley
Black eyed peas
Capsicums
Carrots
Cauliflower
Cucumber
Eggplant
Lima bean
Maize / Sweetcorn
Millet
Oats
Peas
Potatoes
Rockmelons
Soybeans
Spinach
Squash
Sugarcane
Sweet potato
Tomatoes
Wheat

Accelerating the adoption of best management practices for the Australian onion industry is funded by Hort Innovation using the onion industry research and development levy and contributions from the Australian Government.  
Project Number: VN21000

Hort Innovation ONION FUND