

NSW Cut Flower Industry

Managing Rhizoctonia in Cut Flowers (*Rhizoctonia* species)

Description

Rhizoctonia species are soilborne fungi found worldwide, thriving in warm, moist soil. They consist of numerous species and strains, differing in host range and pathogenicity. They rarely produce fungal spores but instead rely on small resting bodies called sclerotia which survive in plant debris and soils. *Rhizoctonia solani* is the primary species associated with root rot and damping-off diseases (also known as *Thanatephorus cucumeris*), but there are several other pathogenic species (also known as *Ceratobasidium* species) that are poorly described on cut flowers but commonly isolated from rotting roots.



Figure 1. *Rhizoctonia* causing root and crown rot – note typical threads of fungal hyphae

Damage

In plants growing close to the ground, *Rhizoctonia* species infects older leaves in contact with the soil, forming brown lesions on leafstalks and leaves, which can lead to wilting and plant death. On succulent stems, roots, and storage organs, it causes brown, rotting areas or sunken cankers, often covered by fungal mycelium. *Rhizoctonia* species can cause various diseases in cut flowers, including:

- **Damping-off:** Seedlings may rot before emerging from the soil (pre-emergence) or develop tap root rot or stem cankers after emergence (post-emergence)
- **Cutting and Stem Rot:** Cuttings rot from the cut end, and stems develop dark, sunken cankers
- **Web Blight (Aerial Blight):** The fungus spreads with high humidity, causing severe defoliation and leaf spots
- **Infections in Mature Plants:** Stem girdling lesions may cause plants to fall over or wilt

→ Quick Facts

- **HOST PLANTS:**
Nearly all cultivated plants, including ornamental nursery plants, vegetable seedlings, and bedding plants
- **WHERE TO CHECK:**
Inspect both above-ground and below-ground plant parts, especially the root or hypocotyl close to the soil surface
- **WHEN TO MONITOR:**
During periods of warm, moist soil conditions
- **HOW OFTEN TO MONITOR:**
Regularly, particularly during high humidity periods and after planting or irrigation
- **ACTIONS:**
Use pathogen-free soil and water, maintain optimal plant spacing, avoid overwatering, regularly disinfect tools and equipment, and apply fungicides as a preventive measure.



Figure 2. *Rhizoctonia* causing damping-off chrysanthemum seedlings

Disease Management

Good biosecurity practices can prevent its incursion and establishment such as using footbaths, sourcing pathogen-free seedlings and media.

Cultural

- **Grow in Pathogen-Free Soil:** Use sterilised or pasteurised soil, or soilless potting mixes to avoid introducing the fungus.
- **Optimal Plant Care:** Maintain conditions that promote healthy growth (older plants are more resistant) and minimise plant wounds, which can provide entry points for the fungus.
- **Spacing and Watering:** Ensure adequate spacing to prevent crowding and improving circulation. Avoid overwatering, which can exacerbate the disease.
- **Nutrition:** Reduce plant stress by minimising the build-up of high levels of soluble salts in the root zone. Reduce nitrogen fertiliser application and watering in the case of an outbreak.
- **Reduce dust:** Reduce dust by concreting paths or laying gravel. Separate parking areas from the growing area to minimise dust introducing this pathogen.
- **Beneficial microbes or composted organic soil amendments** can suppress Rhizoctonia disease.
- **Removal of infected material:** Remove any infected plants and dispose or deep bury them to prevent spread.

Chemical

- Fungicides can be used as a preventative strategy, e.g. treat cuttings with a fungicide to lower risk of disease infection. Drench plants with registered fungicides. These will not eradicate the pathogen but will help protect healthy plants.
- If growing from seed, treat the seed with a recommended fungicide before planting.

Take Aways

- **Prevention is Critical:** Effective management relies on preventing the introduction of the pathogen through hygiene, pathogen-free materials, and careful water management
- **Integrated Approach Needed:** Combining cultural and chemical strategies is essential for managing Rhizoctonia in cut flower production.
- **Persistent Fungus:** *Rhizoctonia* species can persist in the soil for years making it crucial to implement long-term prevention and control strategies.

References / More Information

- <https://www.horticulture.com.au/globalassets/hort-innovation/resource-assets/ny11001-rhizoctonia.pdf>
- <https://www.business.qld.gov.au/industries/farms-fishing-forestry/agriculture/biosecurity/plants/diseases/horticultural/rhizoctonia>

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