

Sclerotinia drop (*Sclerotinia minor* (*Sm*) and *S. sclerotiorum* (*Ss*))

Disease symptoms



Symptoms first appear as small, light brown lesions in leaves that are in contact with soil, and higher leaves



Cottony white fungal growth (mycelium) develops on infected plant tissue



Wilting of the entire plant, leaving layers of the plant flattened on the ground



Sm sclerotia are small, irregular, and circular (<math><2</math> mm diameter). Sclerotia are often formed in chains.



Ss sclerotia are larger and elongated (2-20 mm long and 3-7 mm wide).

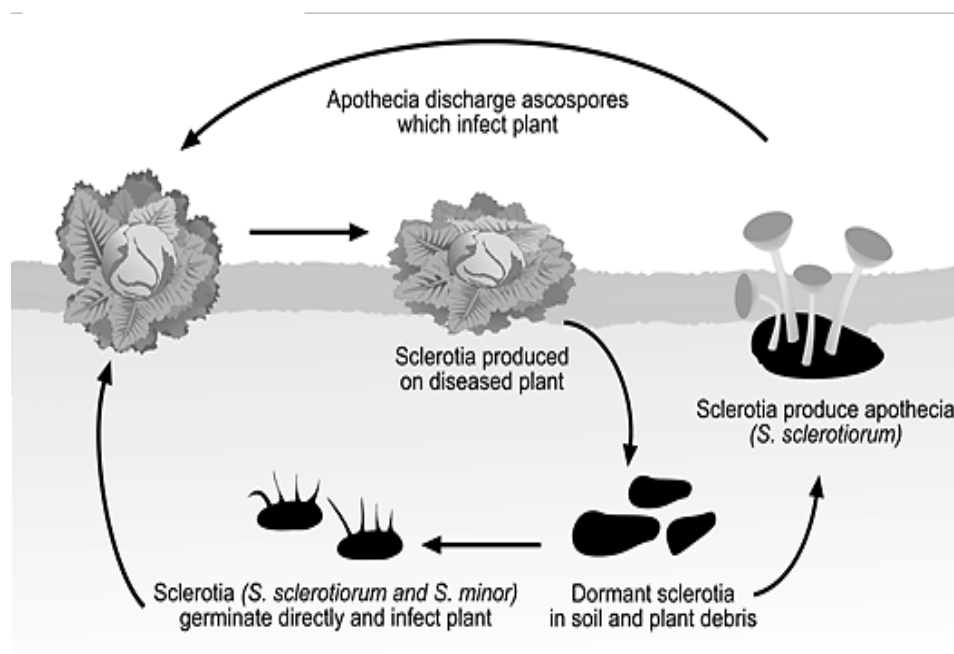


Ss produce fruiting bodies (apothecia) that resemble tiny mushrooms.

Sclerotia are a compact mass of hardened fungal mycelium containing food reserves. Sclerotia germinate, producing mycelium that directly infects the lower leaves and stems

Apothecia produce ascospores that can infect senescent lettuce leaves.

Sclerotinia drop disease cycle



Conditions that favour the disease

- Wet soil conditions favour disease development of both *Sclerotinia* species.
- For **Ss**, cool and moist conditions are necessary for development of the fruiting structure (apothecium), and spore germination on lettuce leaves.
- Lettuce drop is favoured by high relative humidity, high soil moisture, high-density planting, and temperatures around 18–20°C.
- *Sclerotinia* infects and rapidly invades senescent or dead leaves and progresses towards healthy tissues, which the fungus rots by means of cell-wall-degrading enzymes.

Disease management

- Avoid planting in fields with a history of *Sclerotinia*.
- Avoid known crop hosts including beans, cauliflower, celery, tomato.
- Crop rotation with non-host crops will reduce the number of sclerotia in the soil. Ideal crop rotation is 3–4 years and the use of *Sclerotinia* non-host plants.
- For crop rotation to be effective against *Sclerotinia*, it must be coupled with a weed control programme that minimises the chances of a 'green bridge' establishing and allowing sclerotia to persist in fields.
- Small grain crops (maize, wheat, barley, oats, sorghum) are not susceptible to infection by *Sclerotinia* spp.. Onions, maize and spinach are reported as discouraging *Sclerotinia*.
- Avoid overly wet soils and keep the soil surface as dry as possible with careful irrigation.
- Irrigation should be carried out preferably in the morning and early afternoon (never in the evening) to allow plants to dry out as soon as possible.
- Form well-prepared beds on level to gently sloping ground to provide even distribution of water and assure good drainage. Raised beds will reduce water/humidity around the lettuce plants.
- Canopy management, including wider row spacing, rows arranged in the direction of prevailing winds, and lower plant density, can be used to increase air flow and decrease humidity in the crop.
- Avoid excessive nitrogen fertiliser application, which can result in lush, succulent plants that are more prone to *Sclerotinia* infection (and other pathogens).
- Removing diseased lettuces can help reduce disease.
- Apply fungicides beginning with the rosette stage before the older leaves cover the soil. *Botrytis* fungicides will also control *Sclerotinia*.
- Fungicide efficacy is affected by disease pressure, weather conditions, method of application, fungicide overuse and crop canopy (spray penetration and coverage).
- Biocontrol agents (BCAs) currently registered for *Sclerotinia* in lettuce in NZ (BACSTAR™, CLARITY®, SERENADE®) are all strains of *Bacillus subtilis*.
- Lettuce cultivars that are resistant to *Sclerotinia* are currently not available. However, lower *Sclerotinia* drop incidence is often associated with seedling vigour, upright growth habit, and low leaf area.
- Tillage is most effective if the sclerotia are buried and remain buried until sclerotia viability is reduced.

Summary

- *Sclerotinia* control is a blend of chemical and cultural practices.
- Cultural practices generally aim to reduce the number of sclerotia in the soil or create a local environment that is non-conducive for the disease.

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