Destruction of sclerotia of *Sclerotinia minor* and *S. sclerotiorum* in wet soil

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*Sclerotinia minor*  *S. sclerotiorum*

Conditions that favor *Sclerotinia drop of lettuce*

- High population of sclerotia in soil
- Moist soil
- Sclerotia of both species can survive up to 8-10 years in soil
  - Sclerotium germination decreases with time and depth of burial
- Both fungi grow from 50 to 77 F and optimally at 68 F

Incorporation of crop residue and sclerotia into soil

Management of *Sclerotinia drop in lettuce*

- Sclerotia are the survival structures of the pathogen, which remain dormant in soil until activated by the presence of lettuce
- Disease control measures for *Sclerotinia drop* focus on destroying or inactivating these sclerotia
Infection zone for *Sclerotinia minor*

Ascospores of *S. sclerotiorum*

How can sclerotia be destroyed or inactivated?

- Destruction in wet soil

Laboratory studies: Effect of temperature and moisture on viability of sclerotia

- Sclerotia of *S. minor* or *S. sclerotiorum* were buried in a dry field soil (7-56-37 sand-silt-clay) in a series of containers 3 inches in diameter and 4 inches deep
- Sclerotia in soil were incubated at 58, 68, 77, 86, 95 and 104 F for 1 to 4 weeks
- Soil in containers was either kept dry or saturated with water
- After burial in soil for 1, 2, 3, or 4 weeks, sclerotia were tested for viability after surface-sterilizing with bleach and alcohol by plating onto acidified potato dextrose agar

Laboratory studies

Mycelial growth from sclerotia on PDA
Field studies: Effect of temperature and moisture on viability of sclerotia

- Sclerotia of *S. minor* or *S. sclerotiorum* were placed at a depth of 0 or 2 inches (5 cm) within furrows.
- Soil was either irrigated every 7 to 14 days or maintained in a dry state.
- Sclerotia were collected after 2, 4, 6 and 8 weeks, surface-sterilized and tested for ability to germinate on potato dextrose agar.
- This test was performed when mean soil temperature was 26°C (79°F) and 33°C (91°F).

*Effect of mean soil temperature and soil depth on germination of sclerotia (After 8 weeks)*

*S. minor*: germination of sclerotia in dry vs. irrigated soil (7-14 day interval) (after 8 weeks)
**S. sclerotiorum:** germination of sclerotia in dry vs. irrigated soil (7-14 day interval) (after 8 weeks)

- **Conclusions**
  - In irrigated soil, sclerotia of *S. minor* are inactivated at a greater rate than *S. sclerotiorum*
  - Sclerotia of both pathogens survive much better in dry soil than in irrigated soil

**Effect of irrigation frequency on germination of sclerotia**
- Once per week compared to 3 times a week

**Effect of soil flooding on germination of sclerotia**

**Soil flooding experiments**
Effect of soil flooding on sclerotia germination at soil depths of 0, 10 and 20 cm (after 8 weeks)

Field trials
Temp (86 to 91°F)

Germination of control sclerotia was 90%

Land preparation activities in July and August prior to lettuce seeding