

# Sclerotinia Crown and Stem Rot Resistance

*Sclerotinia trifoliorum* Eriks.

L. H. Rhodes

## PLANT CULTURE

Greenhouse..... Pots or flats  
 Container..... 1 part soil:1 part peat:1 part vermiculite, limed (if necessary) to approximately pH 7  
 Temp/Light..... 20 to 25°C; 12+ hours daylength  
 No. of Plants..... Approximately 1 week after emergence, thin seedlings to 25 per replication  
 No. of Reps..... 4 replications  
 Other..... Fertilize with Hoagland's solution No. 2 1 week after emergence, 50 mL per 25 seedlings

## INOCULUM CULTURE

Source..... Axenic culture  
 Storage..... Acidified potato dextrose agar cultures (1 mL 85% lactic acid per liter of PDA)  
 Temperature..... 4°C  
 Storage Life..... Up to 3 years

## INOCULATION PROCEDURE

Age of Plant..... 2 weeks  
 Type of Inoc..... Mycelial fragment suspension  
 Inoc. Prod..... Difco potato dextrose broth shake cultures: Inoculate sterile PD broth with 7 mm diameter agar plugs from margins of actively growing *S. trifoliorum* cultures; incubate for 7 days at 15°C on rotary shaker; blend 3 spherical colonies (each 28-30 mm in diameter) for 2-3 seconds only in 250 mL water in a Waring Blender; strain the inoculum through a 50 micron sieve; spray approximately 3 minutes per flat  
 Method..... Foliar spray with mycelial fragment suspension, 50 mL per 150 plants (1 flat)

## INCUBATION

Location..... Growth chamber; cover flats with clear plastic domes for 7 to 10 days  
 Temp..... 15°C optimum  
 Plant counts..... Count plants prior to inoculation  
 Spacing..... Approximately 8 mm between plants  
 Age at rating..... 3 weeks

## RATING

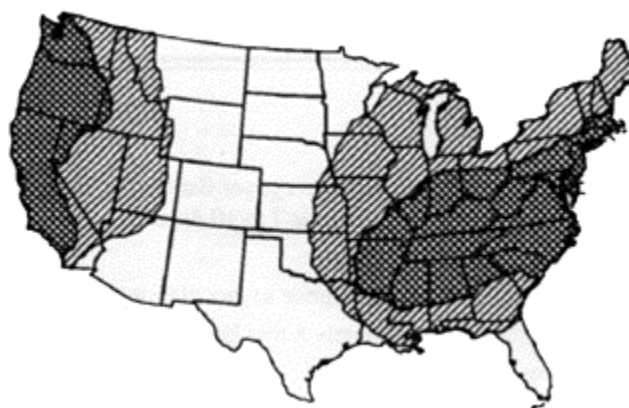
1 Resistant..... Healthy plant; no evidence of infection (or, only 1 or 2 small leaf lesions).  
 2 Resistant..... Light damage; one upper trifoliate may be affected  
 3 Mod. Susc. .... Terminal, including top leaves, killed back, basal portion of stem, including some lower leaves, may still be green  
 4 Susceptible..... Plant still alive but severely damaged; most of top is rotted or discolored  
 5 Susceptible..... Dead plant

## CHECK CULTIVARS

|                    | Approximate Expected Resistance (%) | Acceptable Range of Reaction (%) |
|--------------------|-------------------------------------|----------------------------------|
| <b>Resistant</b>   |                                     |                                  |
| Vernal             | 25                                  | 10-40                            |
| <b>Susceptible</b> |                                     |                                  |
| Armor              | 3                                   | 0-5                              |

Values for resistant standards include total of 1's and 2's.

## DISTRIBUTION AND SEVERITY OF SCLEROTINIA CROWN AND STEM ROT RESISTANCE



*Sclerotinia trifoliorum* Eriks.

(Click on the map above for a larger version. See also the [KEY](#))

## SOURCES OF INOCULUM AND EXPERTISE

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## CORRELATION TO FIELD REACTION

Unknown.

## RACES

No races of *Sclerotinia trifoliorum* have been reported. Differences in virulence may exist between isolates of *S. trifoliorum*.

## INOCULATION OPTIONS AND RANGE OF CONDITIONS

Immediately prior to inoculation plants are misted with water (approximately 10 mL per 25 plants). Plants are then sprayed with a suspension of mycelial fragments prepared by blending 3 spherical colonies of *S. trifoliorum* in 250 mL water (50 mL inoculum per 150 plants).

## HELPFUL INFORMATION

Because seedling reaction is dependent on inoculum load, it is important to spray inoculum evenly over all entries. Also, because of near total decomposition of some plants, seedlings should be counted prior to inoculation. When plants are rated for disease severity, those which cannot be accounted for are assumed to be rotted and given a rating of 5.

## ALTERNATIVE METHODS

Field evaluations may be conducted in areas of high infestation (2).

## REFERENCES

1. Pierson, P.E., T.H. Anderson, and L.H. Rhodes. 1988. Screening for resistance to *Sclerotinia trifoliorum* in vivo and in vitro. Proc. 31st N Am. Alfalfa Imp. Conf. pp.15.
2. Rhodes, L.H., T.H. Anderson, P.E. Pierson, and D.K. Myers. 1989. Field evaluation of *Sclerotinia* crown and stem rot in six alfalfa cultivars. Proc. 21st Central Alfalfa Imp. Conf. pp.13-14.