

Stemphylium Leaf Spot Resistance (Warm Temp. - Eastern Biotype)

Stemphylium botryosum Wallr.

RoseMary Salter and Kenneth Leath

THIS TEST IS IN THE DEVELOPMENTAL STAGE AND SHOULD BE USED CAUTIOUSLY

PLANT CULTURE

Greenhouse

Container Flats or moveable carts
Medium Greenhouse planting mix
Temp/Light 21 to 30°C; 16+ hour daylength
No. of Plants 30 to 40 per rep; 1 to 2 rows of plants per entry
per flat
No. of Reps 3 minimum
Other Promote good growth

INOCULUM CULTURE

Source Infected leaf tissue
Storage Sealed cultures for several months or silica gel
crystals for longer periods
Temp/Light Culture 21+1°C, 12 hour daylength; storage 4°C
Storage Life At least 4 years
Incubation Cultured on V-8 plates under cool white
fluorescent lights at 20Mm -2sec-1 for approx.
10 days

INOCULATION PROCEDURE

Age of Plant 4 to 6 weeks (4 to 6 trifoliates); or on regrowth
Plant Counts Prior to inoculation
Type of Inoc Conidial suspension with 50 to 100 ppm Tween
20 or 1 small drop per liter
Concentration 1×10^4 to 5×10^4 spores per mL
Method Foliar spray until runoff

INCUBATION

Location Moist chamber for 48 hours
Temperature 20 to 23°C
Lighting Darkness is satisfactory for the initial 48 hours,
then 16 hr daylength
Humidity 100% R.H. for initial 48 hours
Age at Rating 5 to 8 weeks (about 10 days after inoculation)

RATING

Class descriptions are subjective and may be adjusted. Fewer classes
may be used and still meet the objectives of many experiments.

1 Resistant Healthy, symptom-free top growth
2 Resistant Small (<1mm) brown or black lesions or pepper
spots; no defoliation
3 Susceptible Larger (1 to 3mm), discrete lesions with necrotic
centers; usually no chlorosis or defoliation

4 Susceptible Large (>3mm), target-type lesions or necrotic areas;
may have petiole lesions
5 Susceptible Lesions >3mm, chlorosis, defoliation

CHECK CULTIVARS

No checks are available for the Eastern (warm-temperature) biotype.
However, Apalachee has been reported to have some resistance (3).

DISTRIBUTION AND SEVERITY OF STEMPHYLIUM LEAF SPOT



Stemphylium leaf spot; *Stemphylium botryosum* Wallr.

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

SOURCE OF INOCULUM AND EXPERTISE

Name K.T. Leath
Address USDA-ARS
U.S. Regional Pasture Res. Lab.
University Park, PA 16802
Phone 814-863-0945

CORRELATION TO FIELD REACTION

Greenhouse and field test results have been similar.

RACES

No races are known to exist, but two biotypes of *S. botryosum* have been
reported; the warm-temperature (Eastern) biotype, and the cool-
temperature (California) biotype.

CULTURE OPTIONS AND RANGE OF CONDITIONS

Stemphylium can appear variable in culture. Keep refrigerated for storage. The cool temperature biotype has shown variability for virulence among single spore subcultures.

PLANT GROWTH OPTIONS AND RANGE OF CONDITIONS

Plants may be started in the greenhouse or growth room. Four-week old regrowth has been inoculated successfully.

INOCULATION AND INCUBATION CONDITIONS

After inoculation, keep plants moist for a full 48 hours. Incubation can range from 1 to 2 weeks after inoculation.

HELPFUL INFORMATION

Dry plants slowly after humidity treatment. Air-dry away from direct sunlight. Selections may be reinoculated to test for escapes.

ALTERNATIVE METHODS

Selection may be possible under field conditions. Field inoculations have been done.

REFERENCES

1. Cowling, W.A., D.G. Gilchrist, and J.H. Graham. 1981. Biotypes of *Stemphylium botryosum* on alfalfa in North America. *Phytopathology* 71:679-684.
2. Hill, R.R., Jr., K.T. Leath, and K.E. Zeiders. 1972. Combining ability among four-clone alfalfa synthetics. *Crop Sci.* 12:627-630.
3. Lucas, L.T., T.H. Busbice, and D.S. Chamblee. 1973. Resistance to *Stemphylium* leafspot in new alfalfa variety. *Plant Dis. Rep.* 57 (11):946-948