

SPRING BLACKSTEM AND LEAFSPOT RESISTANCE

Test accepted: March 1991

Pathogen: *Phoma medicaginis* (Malbr. & Roum.) var. *medicaginis* Boerema

Test authors: Rosemary Salter and Kenneth Leath

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

Storage Culture on PDA on sealed slants or plates for 6 months in refrigerator (4°C) or on silica gel (4°C) for longer term

Incubation On plates of PDA in incubator for 10 to 28 days to produce inoculum, light not critical

Temperature..... 20 to 22°C

INOCULATION PROCEDURE

Age of Plant 4 to 6 weeks (4 to 6 trifoliates), or on regrowth

Plant Counts Just prior to inoculation

Type of Inoc. Conidial suspension with 50 ppm Tween 20 or 1 very small drop per liter

Concentration.... 1×10^6 to 4×10^6 spores per mL

Method Foliar spray until runoff

INCUBATION

Location Moist chamber for 48 hr; greenhouse next 8-10 days

Temperature..... 18 to 24°C

Lighting Darkness is satisfactory for the initial 48 hours, then 16 hr daylength

Humidity 100% R.H. for first 48 hr

Age at Rating 5 to 8 weeks (about 10 days after inoculation)

RATING

Class descriptions are subjective and may be adjusted. Percent resistance is a total of classes 1 and 2.

1 Resistant Healthy, symptom-free top growth

2 Resistant Small (<2mm), brown or black lesions or flecks; no defoliation

3 Susceptible..... Larger (2 to 3mm), discrete lesions; lesions may be on leaves and petioles; usually no chlorosis or defoliation

4 Susceptible..... Large (>3mm) lesions; no defoliation; petiole lesions

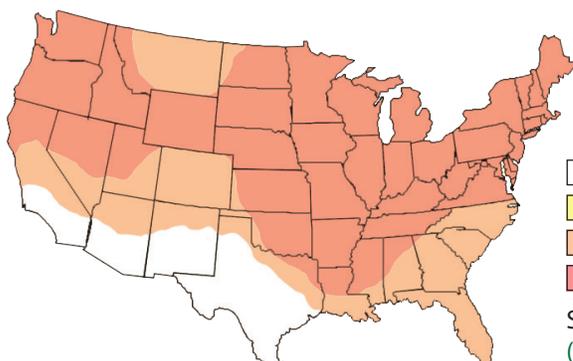
5 Susceptible..... Lesions >3mm, fruiting; dead leaves or defoliation

CHECK CULTIVARS

	Approximate Expected Resistance (%)	Acceptable Range of Reaction (%)
Moderately Resistant		
PL-PhR*	25	20-25
Ramsey	25	20-25
Susceptible		
Ranger	3	0-5
Lahontan	3	0-5

*Seed can be obtained from K. Leath.

DISTRIBUTION AND SEVERITY OF SPRING BLACKSTEM AND LEAFSPOT



- Not known to occur.
- Occurs but is not considered a problem.
- Occasionally causes significant losses on susceptible cultivars.
- Frequently causes significant losses on susceptible cultivars.

Spring Blackstem and Leafspot; *Phoma medicaginis* Malbr. & Roum. var. *medicaginis* Boerema
(Click map to the left for a larger version.)

SOURCE OF INOCULUM AND EXPERTISE

K.T. Leath

USDA-ARS

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CORRELATION TO FIELD REACTION

Not tested, but no problems have been observed.

RACES

No races are known to exist.

CULTURE OPTIONS AND RANGE OF CONDITIONS

Keep refrigerated for storage. Store 6 months or less on PDA; silica gel for longer periods.

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

Temperatures of 18 to 24°C have been found favorable for symptom development. 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. If used in a sequential inoculation with other pathogens, inoculate with Phoma last as it can cause death.

ALTERNATIVE METHODS

Selection may be possible under field conditions.

REFERENCES

1. Hijano, E.H., and F.I. Frosheiser. 1980. Effect of spring blackstem on alfalfa forage yield in the greenhouse and possible selection methodology. Proc. 27th N. Am. Alfalfa Imp. Conf. p.37.
2. Hill, R.R., Jr., K.T. Leath, and D.E. Rowe. 1989. Registration of PL-PhR alfalfa germplasm. Crop Sci. 29: 1577.
3. Hill, R.R., Jr., K.T. Leath, and K.E. Zeiders. 1972. Combining ability among four-clone alfalfa synthetics. Crop Sci. 12:627-630.