Spring Blackstem and Leafspot Resistance
Phoma medicaginis (Malbr. & Roum.) var. medicaginis Boerema
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 ......... 1x10^6 to 4X10^6 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

<table>
<thead>
<tr>
<th>Approximate Expected Resistance (%)</th>
<th>Acceptable Range of Reaction (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Moderately Resistant</td>
<td></td>
</tr>
<tr>
<td>PL-PhR*</td>
<td>25</td>
</tr>
<tr>
<td>Ramsey</td>
<td>25</td>
</tr>
<tr>
<td>Susceptible</td>
<td></td>
</tr>
<tr>
<td>Ranger</td>
<td>3</td>
</tr>
<tr>
<td>Lahontan</td>
<td>3</td>
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</tbody>
</table>

*Seed can be obtained from K. Leath.

DISTRIBUTION AND SEVERITY OF SPRING BLACKSTEM AND LEAFSPOT

(Spring Blackstem and Leafspot; Phoma medicaginis Malbr. & Roum. var. medicaginis Boerema)

Source of Inoculum and Expertise

Name .... K.T. Leath
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Phone .... 814-863-0945

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

