SCLEROTINIA SCLEROTIORUM ON HORSECHESTNUT TREES[1]

C.O. Gourley and R.W. Delbridge[2]

Abstract

Sclerotinia sclerotiorum was determined for the first time as the cause of a disease of horsechestnut (Aesculus hippocastanum) trees. Infection of current season's growth resulted in wilt and leaf necrosis; sclerotia were produced in cavities in decayed pith tissue. The occurrence of the disease in Nova Scotia in 1970 extends the host range of S. sclerotiorum.

In July 1970, several 5- to 7-ft trees of horsechestnut, Aesculus hippocastanum L., growing in lawns at Onslow, Colchester County, Nova Scotia, were severely blighted. Sclerotinia sclerotiorum (Lib.) de Bary, one of the most widespread and destructive pathogens of agricultural crops and ornamental plants (2, 3), was the only organism isolated from diseased wood. As far as the authors are aware, this fungus has not heretofore been reported as a pathogen of horsechestnut.

Figure 1. Sclerotinia sclerotiorurn canker on new wood of horsechestnut.

The foliage on the affected trees was severely wilted and many leaves were necrotic. This blight condition resulted from a fungal infection of the succulent tissue of the current season's growth. Often the pith was exposed in cankers which formed on this wood (Fig. 1). Diseased wood appeared water soaked and the infection advanced most rapidly in the pith region. In many cases, the entire shoot was diseased and the fungus had advanced into the pith of adjacent one-year-old wood. Sclerotia of S. sclerotiorum formed in cavities left by decaying pith (Pig. 2).

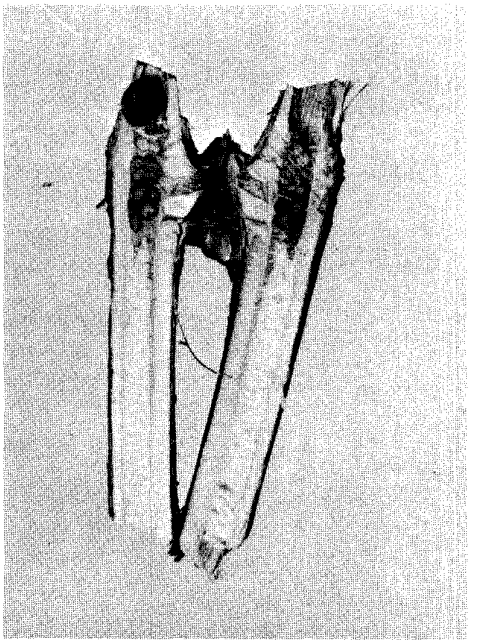

Figure 2. Sclerotium of *S. sclerotiorum* in pith cavity of new wood of horsechestnut.

[1] Contribution No. 1446, Research Station, Canada Department of Agriculture, Kentville, Nova Scotia.

[2] Plant Pathologists, CDA Research Station, Kentville; and Nova Scotia Department of Agriculture and Marketing.

Infected tissue was surface sterilized in 1:1000 $HgCl_2$ solution, rinsed in two changes of sterile water, and plated on potato-dextrose agar. Sclerotia excised from the pith region of infected wood were plated on the same medium. Diseased wood and sclerotia yielded only S. sclerotiorum. All colonies produced sclerotia, ca 3.2 x 2.4 mm, on potato-dextrose agar in petri plates.

The method of Henson and Valleau (1) was used to produce apothecia and ascospores of S. sclerotiorum in vitro. Sclerotia produced in culture and held at 5°C for 75 days were transferred to 2% agar in petri plates and exposed at room temperature to constant fluorescent light. Apothecia and ascospores typical of those described for S. sclerotiorum developed within 3 weeks. The size, ca 13.9 x 6.4 µ, of ascospores was within the range given for this fungus (3).

S. sclerotiorum usually attacks stems and other succulent tissue at or near ground level, and generally the infection is most severe during periods of cool, moist weather (3). Excessive rainfall in July of 1970 may have increased the amount of fungus inoculum and provided ideal conditions for infection of the new growth of the horsechestnut trees. The disease syndrome indicated that the initial infections occurred on the most succulent tissue. The source of the inoculum is not known, but because of the height at which the infections occurred, air-borne ascospores were undoubtedly the cause of the primary infections. Lawn grasses are not normally hosts of S. sclerotiorum so the inoculum probably came from outside the lawn area.

The morphological characteristics of the fungus indicate that is is a common strain of S. sclerotiorum. The occurrence of the disease on horsechestnut extends the host range of this pathogen.

Literature cited

1. Henson, L., and W.D. Valleau. 1940. The production of apothecia of Sclerotinia sclerotiorum and S. trifoliorum in culture. Phytopathology 30:869-873.

2. Pirone, P.P., B.O. Dodge, and H.W. Rickett. 1960. Diseases and pests of ornamental plants. The Ronald Press Company, N.Y.

3. Walker, J.C. 1969. Plant pathology, 3rd ed. McGraw Hill Book Company, New York.