

Sirococcus Shoot Blight of Blue Spruce in North Carolina

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ABSTRACT

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Shoot blight of blue spruce caused by *Sirococcus strobilinus* is reported for the first time in North Carolina from two widely separate locations.

Shoot blight of conifers, caused by *Sirococcus strobilinus* Pruess, has been reported on *Abies*, *Picea*, *Pinus*, and *Tsuga* in North America. The disease occurs from northern California to British Columbia and Alaska in western North America (1,8-10) and from the Lake States, Maine, Quebec, and Nova Scotia in eastern North America (3-5,11). *S. strobilinus* has been responsible for shoot blight of blue spruce (*Picea pungens*) in Maine (11), Quebec (5), and, recently, Kansas (7). Graves (2) reported that *S. strobilinus* (as *Ascochyta piniperda* Lindau) caused shoot dieback of Norway spruce (*P. abies*) and red spruce (*P. rubens*) seedlings in Buncombe County, North Carolina, in 1910.

Sirococcus shoot blight was identified on a blue spruce specimen from Avery County, North Carolina, submitted in June 1979 to the Plant Disease and Insect Clinic, Department of Plant Pathology, North Carolina State University. The disease occurred on a single tree planted as a seedling in 1968. Another specimen was submitted to the Plant Disease and Insect Clinic in August 1979 from Jackson County, North Carolina. The disease was affecting 75% of the trees in a blue spruce plantation established in 1966. These are the first reports of the disease on blue spruce in North Carolina and apparently only the second report of the disease in the state.

Pycnidia of *S. strobilinus* were sparse on blighted needles on the specimen from Avery County. Pycnidia were abundant on dead needles and dead shoot tissue of the specimens from Jackson County (Fig. 1A). Mature, two-celled conidia were

present in pycnidia from both locations. Conidia from Avery County ranged from 9.2 to 13.2 μm and averaged $11.3 \times 2.6 \mu\text{m}$, and those from Jackson County ranged from 6.1 to 15.8 μm and averaged $12.6 \times 2.6 \mu\text{m}$. These measurements agree well with those reported by Robak (6).

Symptoms on trees from both locations were similar to published reports (1,2,7-9). Cankers and dead needles were present only on current year's growth. Infected shoots developed a downward crook with some twisting (Fig. 1B). Resin

flow was present but not abundant on cankers of both specimens.

Blue spruce is grown in small plantations and occasionally in landscapes throughout western North Carolina. Norway spruce, a host of the pathogen, is grown to a limited extent in the region, and red spruce is a native species occupying a limited range in upper elevations. The susceptibility of eastern hemlock (*Tsuga canadensis*) and Carolina hemlock (*T. caroliniana*) has yet to be determined. The pathogen has caused serious disease problems on black spruce (*P. mariana*), white spruce (*P. glauca*), and western hemlock (*T. heterophylla*) (1,5). The presence of *Sirococcus* shoot blight in two widely separated locations in western North Carolina poses a threat not only to blue spruce but also to other conifers in this region.

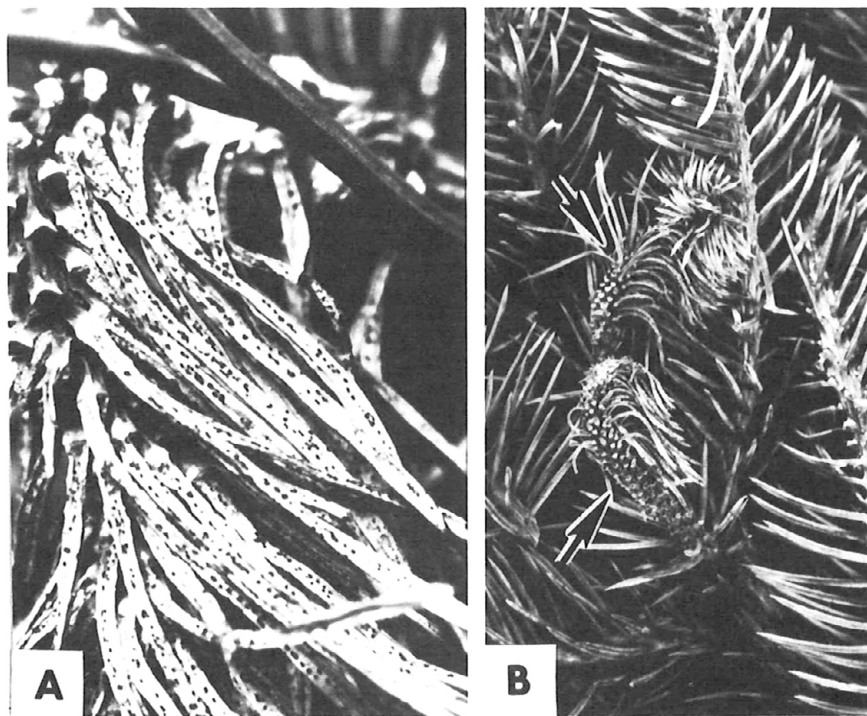


Fig. 1. *Sirococcus* shoot blight on blue spruce: (A) Pycnidia on dead needles. (B) Blighted shoots (arrows).

LITERATURE CITED

1. FUNK, A. 1972. Sirococcus shoot blight of western hemlock in British Columbia and Alaska. *Plant Dis. Rep.* 56:645-647.
2. GRAVES, A. H. 1914. Notes on diseases of trees in the southern Appalachians III. *Phytopathology* 4:63-72.
3. MAGASI, L. P. 1975. First record of Sirococcus shoot blight on red pine in Nova Scotia. *Plant Dis. Rep.* 59:623-624.
4. O'BRIEN, J. T. 1973. Sirococcus shoot blight of red pine. *Plant Dis. Rep.* 57:246-247.
5. POMERLEAU, R., and J. BENAIZET. 1956. Province of Quebec Forest Disease Survey. Pages 35-38 in: *Annu. Rep. For. Insect Dis. Surv.* 1956. Dep. Agric. Can. For. Res. Biol. Div., Sci. Serv. 95 pp.
6. ROBAK, H. 1956. Some fungi occurring on die-back tops and branches of *Picea abies* and *Abies* spp. in western Norway. *Friesia* 5:366-389.
7. SHAHIN, E. A., and L. E. CLAFLIN. 1978. The occurrence and distribution of Sirococcus shoot blight of spruce in Kansas. *Plant Dis. Rep.* 62:648-650.
8. SMITH, R. S., JR. 1973. Sirococcus tip die back of *Pinus* spp. in California. *Plant Dis. Rep.* 57:69-73.
9. SMITH, R. S., JR. 1975. Sirococcus tip blight. Pages 45-46 in: *Forest Nursery Diseases in the United States*. G. W. Peterson and R. S. Smith, Jr., Technical Coordinators. U.S. Dep. Agric., For. Ser. Handb. 470. 125 pp.
10. SMITH, R. S., JR., A. H. McCAIN, M. SRAGO, R. F. KROHN, and D. PERRY. 1972. Control of Sirococcus tip blight of Jeffery pine seedlings. *Plant Dis. Rep.* 56:241-242.
11. U.S. DEPARTMENT OF AGRICULTURE. 1960. *Index of Plant Diseases in the United States*. Agric. Handb. No. 165. 531 pp.