Photo 1: Lower branch dieback on young spruces is typical of Phomopsis canker. Cankers may expand into the trunk and kill trees.

Photo 2: Scraping the bark from lower branches reveals the early stages of Phomopsis canker development. Note the brown canker areas compared to healthy greenish areas.

Photo 3: On occasion, Phomopsis can originate from nursery transplants, whether the trees are in containers, ball and burlap or dug with a hydraulic spade.

The Plant Doctor's LANDSCAPE TIPS

By David L. Roberts, Ph.D, *Michigan State University Extension*

PHOMOPSIS CANKER OF SPRUCE

INTRODUCTION

Spruce (Picea species) is susceptible to a number of pests and diseases. One of the most serious is Phomopsis canker caused by the fungus, Phomopsis occulta. Young spruce less than 10-12 feet tall are most often affected. The fungus causes cankers usually beginning on lower branches (Photos 1 & 2); these cankers may invade the trunk and cause death to the entire tree. All spruce species are susceptible, but species and varieties related to Colorado Blue spruce are generally most susceptible

Phomopsis canker is most prominent on spruce under stress, whether from improper planting, stressful sites or after transplant shock. The disease may develop in the landscape or may be carried from the nursery to landscapes on transplants (Photo 3).

Phomopsis canker may be mistaken for several other spruce diseases, notably two other fungal diseases-Rhizosphaera needlecast and Cytospora canker. Cytospora canker usually attacks older, larger trees and causes a branch dieback beginning in the lower portions of the tree that may appear similar to Phomopsis canker on small spruce. Rhizosphaera causes needles to be cast from the tree but usually doesn't cause branch death; needles and shoots still develop on affected branches.

DISEASE CYCLE

As with many diseases, Phomopsis attacks spruce in the spring from overwintering cankers. Young, tender elongating shoots, are most susceptible. Young shoots infected with fungus usually die and appear wilted (Photo 3). The canker may elongate into the main branch and cause more death, eventually invading the trunk where the tree dies from girdling. Trees are most susceptible up until the time the current year's shoots harden off.

MANAGING PHOMOPSIS CANKER

Because the disease can be lethal, nursery and landscape managers must assume several responsible actions to minimize losses. Cultural and chemical management applied together will yield the most effective results.

Cultural Control: Minimize stress as much as possible. Nursery transplants with larger roots systems will encounter less stress than substandard root balls. Avoid stressful sites as much as possible; such sites may include poorly drained soil and/or poorly aerated soils such as heavy clay. Maintain proper planting practices. Avoid irrigation practices that continually wet the branches and foliage because constant wetting actually promotes fungal infection and spread; if possible, water using some form of sub-irrigation or technique that only moistens the soil. Carefully examine spruce trees for symptoms of Phomopsis canker when purchasing plants from nurseries or retail stores.

Fungicide Control: Fungicides have been shown to help minimize Phomopsis canker development. Frequent irrigation that continually wets the foliage will likely negate any beneficial effects from fungicide applications. Apply several treatments of fungicides from bud break until shoots are hardened off, usually until about mid to late June. Fungicide applications can usually be discontinued after several years or when trees have become well established and are under less stress. Fungicides should work equally well in the nursery and landscape. Based on limited tests, the benzimidazole class of fungicides works best; these fungicides contain thiopahante methyl, thiopahante ethyl and related chemistry.

For more information, please feel free to email me at robertsd@msu.edu or contact a professional plant health care provider. The author, MSU or MGIA do not endorse any particular products. If using pesticides, be sure to read and follow label directions.

MICHIGAN GREEN INDUSTRY ASSOCIATION

MICHIGAN STATE UNIVERSITY EXTENSION

Development of Landscape Tips was sponsored by MSU and MGIA.