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CHERRY TREE BLACK KNOT

by
André Lavallée

Revised by: Gaston Laflamme



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Laurentian Forest Research Centre
Canadian Forestry Service
Environment Canada
1080, route du Vallon
P.O. Box 3800
Sainte-Foy, Québec G1V 4C7

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Cover: Black knot on a branch
(C. Moffet)

CHERRY TREE BLACK KNOT

Black knot is a very widespread disease in North America. In Quebec, it is encountered practically throughout the province, wherever its numerous hosts, all of them roseaceous plants of the genus *Prunus*, are found. The striking symptoms of the disease make it difficult to overlook, and we receive regular and numerous reports of its presence.

Black knot has little impact on Quebec forest because of the scarcity of black cherry and the smallness of our other native cherry trees. It can, however, threaten the survival of fruit trees in some orchards. It mainly affects the aesthetic value and shape of ornamental shrubs.

CAUSE

Ascomycete *Apiosporina morbosa* (Schw.) v. Arx, formerly called *Dibotryon morbosum* (Schw.) Th. & Syd., is the fungus responsible for black knot. Its asexual or conidial form belongs to the genus *Cladosporium*. Physiologically there would appear to be at least two strains of this fungal pathogen, each affecting different hosts.

HOSTS

Black knot can infect several species and varieties belonging to the genus *Prunus*, including cherry, plum, apricot, and peach trees. The susceptible native species in Quebec are: Canada plum (*Prunus nigra* Ait.), pin cherry (*Prunus pensylvanica* L. f.), choke cherry (*Prunus virginiana* L.), and black cherry (*Prunus serotina* Ehrh.). The last species is the only one that reaches tree size; the others are shrubs.



Figure 1. The knot is olive green at first and gradually it turns black.

SYMPTOMS

The first symptom is a slight swelling of the affected branch. As the swelling grows, the bark ruptures and forms an olive-green knot, which eventually turns black (Figure 1). The rough, spindle-shaped black knots initially form on one side of the twig or branch and grow to a size several times the normal diameter of the stem at the point of infection (Cover photo). Knot formation sometimes causes deviation of the branch. Later, the buds die on the segment of the branch between the knot and the tip, and the segment withers. The knots remain on the branches for several years, and often are invaded by insects.

On the trunks of larger cherry trees, long, canker-shaped swellings, up to 70 cm in length, can form (Figure 2). They are generally caused by infection spreading from lateral branches to the main stem. These long cracks make the wood unusable for commercial purposes, especially when several appear on the same trunk.

In humid weather, gum oozes from the plant on infected areas (Figure 3).

A black knot parasite fungus called *Scopinella sphaerophila* (Peck) Mallock sometimes gives the swelling a velvety appearance.

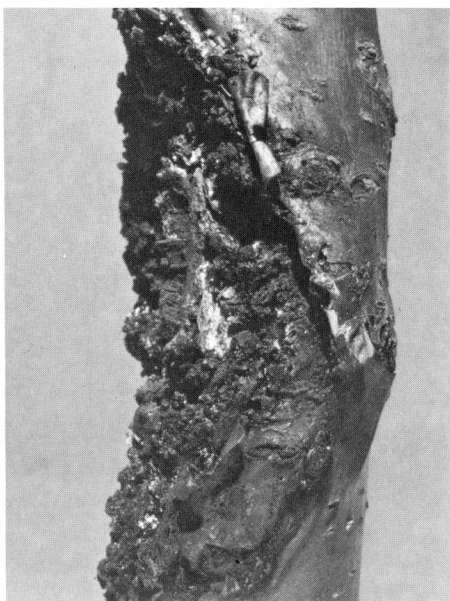


Figure 2. Canker on a trunk.
(C. Moffet)

DISEASE CYCLE

1st Year: The infection starts in the spring but swelling is not evident until a year later. Some authors assert that the initial infection is aided by natural crevices at the base of each ramification.

2nd Year: In late spring or early summer, the swelling becomes noticeable, takes on a light green tinge, and then cracks and is covered with an olive-green velvety layer. This layer is composed of conidia (asexual spores of the pathogen), which are dispersed by the wind. In late summer, formation of conidia halts and the olive-green velvety layer disappears. The knots become progressively harder and darker.

In winter, ascospores (sexual spores of the pathogen) develop in flask-shaped perithecia which form on the knots and give them a rough appearance. The following spring, these ascospores are discharged and dispersed to nearby healthy branches and twigs to produce new infection and thus complete a two-year life cycle.

3rd and Subsequent Years: The fungus continues to grow and spread at the periphery of the knot until the branch is girdled. It then spreads quickly to the portions of the branch that have been desiccated by the attack and continues to reproduce at an accelerated rate starting new infections. Smaller twigs may be killed within the first year, but larger branches usually resist attack for several years.

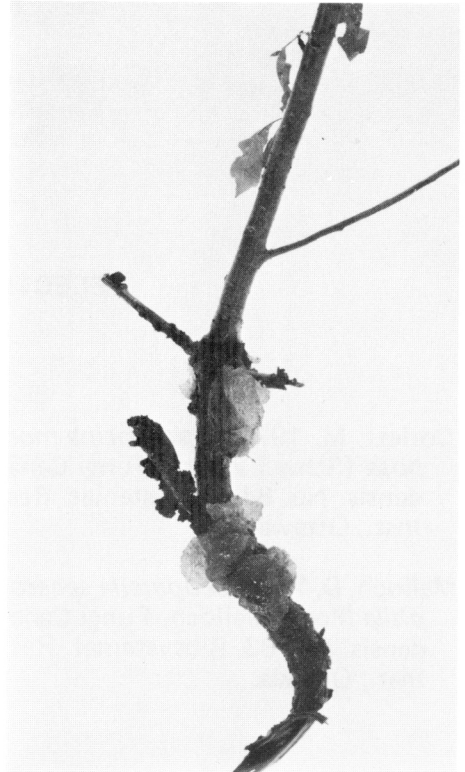


Figure 3. In humid weather, gum is occasionally produced by the infected plant.

CONTROL MEASURES

On infected trees, black knot is controlled by cutting infected branches at least 15 cm back from the knot, just above a living bud or a ramification to encourage rapid healing. This treatment should be carried out preferably in late fall, with tools previously sterilized in methyl alcohol (70%). All infected branches must be destroyed. A close watch at this time of the year will permit early detection of new knots, which must also be cut and burned. If the main trunk is infected, normally the whole tree must be destroyed to eliminate the source of infection.

However, highly valued trees with infection on the trunk or on large branches can be saved by cutting out the infected portions (provided they have not been completely girdled by the fungus).

When black knot is present in the vicinity of healthy but susceptible trees, its spread can be prevented. Good protection can be obtained by spraying the unaffected trees with a sulfur-based fungicide as the buds begin to break and by following up with two additional sprayings at two-week intervals.

SELECTED READINGS

- Corlett, M. 1976. *Apiosporina morbosa* (Schw.) v. Arx. Fungi Canadensis. No. 84. Biosystemat. Res. Inst., Ottawa.
- Malloch, D. 1976. *Scopinella spaerophila* (Peck) Malloch. Fungi Canadensis. No. 83. Biosystemat. Res. Inst., Ottawa.
- Pirone, P.P. 1978. Diseases and pests of ornamental plants. 5th ed. John Wiley & Sons, New York, N.Y.
- Tattar, T.A. 1978. Diseases of shade trees. Academic Press, New York, N.Y.
- Viennot - Bourgin, G. 1949. Les champignons parasites des plantes cultivées. Tome 1. Masson & Cie, Éditeurs, Paris, France.

WARNING

Pesticides are toxic substances that can be absorbed through the skin or by the respiratory system. Therefore, before using a pesticide it is important to carefully read and follow the manufacturer's instructions. Usually the product is to be applied in calm weather. Prevent skin contact and avoid inhaling the spray mist. If a pesticide should accidentally come into contact with the skin, immediately wash the affected area with soap and water. Pesticides must be stored out of reach of children and animals in a cool and well-ventilated location.

For further information please contact:

Forest Insect and Disease Survey Service
Laurentian Forest Research Centre
1080, Route du Vallon
P.O. Box 3800
Sainte-Foy, Quebec
G1V 4C7

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