CHERRY TREE BLACK KNOT

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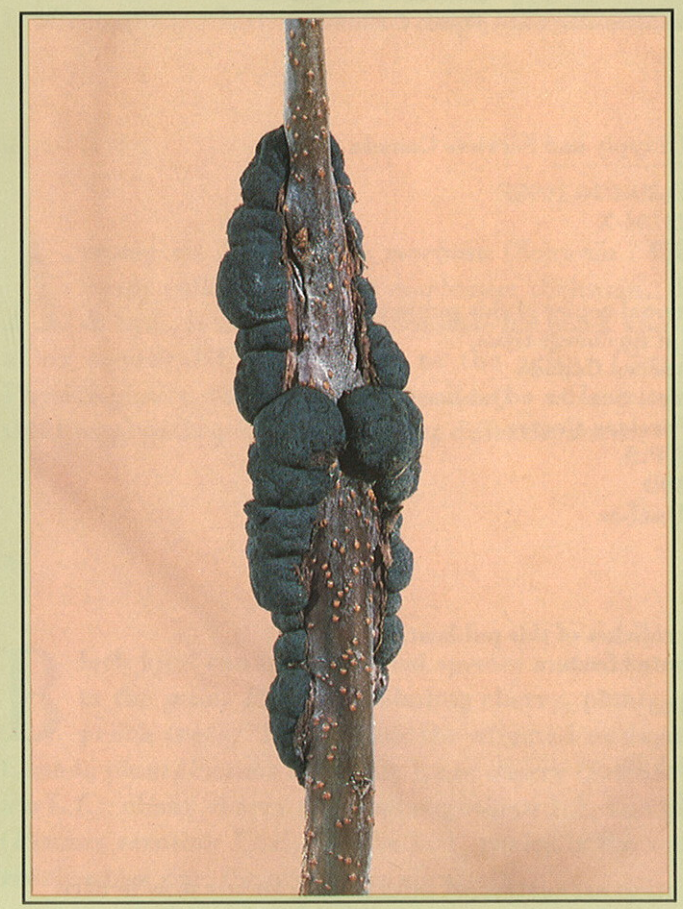

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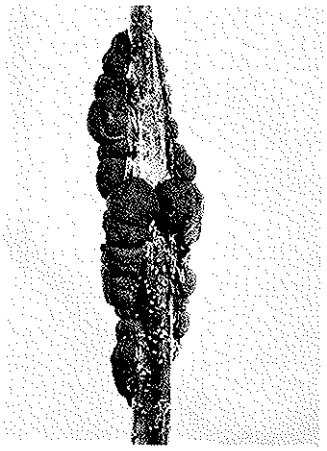

COVER PAGE:
Black knot on a branch
(Photo: C. Moffet)

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INTRODUCTION

Black knot is a very widespread disease in North America. In Quebec, it is encountered practically in all regions, wherever its numerous native hosts, all of them Rosaceous 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 forests because of the scarcity of black cherry and the small size 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* (Schwein.: Fr.) Arx, formerly called *Dibotryon morbosum* (Schwein.: Fr.) Theiss. & 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. In Quebec, the affected native species 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.

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 are initially formed 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 are often invaded by insects.

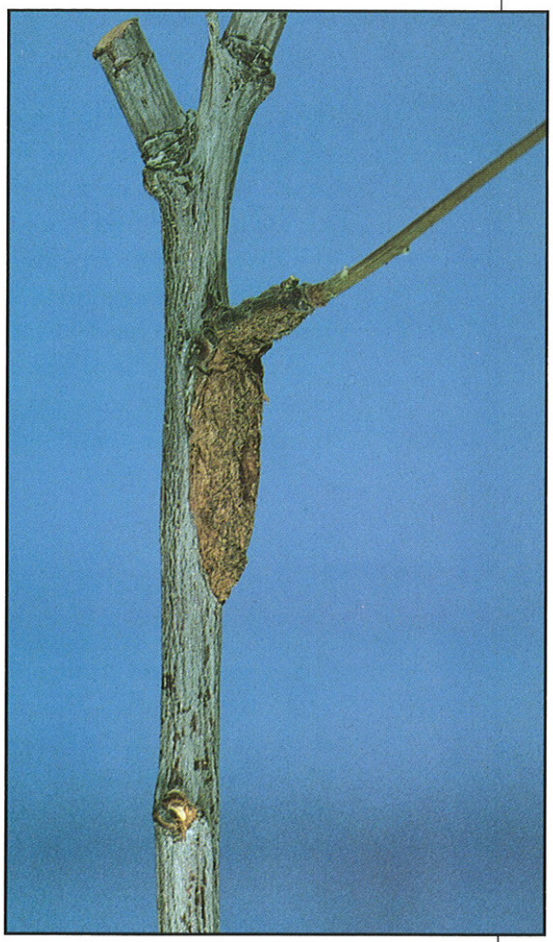

Figure 1 –
The knot is olive-green at first, and then gradually turns black.
(Photo: C. Moffet)

Figure 2 – Canker on a trunk.
(Photo: C. Moffet)

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

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

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

Figure 3 – In humid weather, gum is occasionally produced by the infected plant. (Photo: G. Laflamme)

DISEASE CYCLE

1st Year: The infection starts in the spring, but swelling is not obvious 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 (Figure 1). This layer is composed of conidia (asexual spores of the pathogen) that are dispersed by the wind. In late summer, formation of conidia ceases and the olive-green velvety layer disappears. The knot becomes progressively harder and darker.

In winter, ascospores (sexual spores of the pathogen) develop in flask-shaped perithecia that form on the knots and give them a rough appearance. The following spring, these ascospores are discharged and dispersed to nearby healthy branches 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 to start new infections. Smaller twigs may be killed within the first year, but larger branches usually resist attack for several years.

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 preferably be carried out in late fall, with tools previously sterilized in methyl alcohol (70%) or in bleach diluted in nine parts water. 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, valuable 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, one when the flower buds open and the other when the petals fall.

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Recommendations for fungicide use in this publication are intended as guidelines only. Any application of a fungicide must be in accordance with directions printed on the product label of that fungicide as prescribed under the *Pest Control Products Act*. Always read the label. A pesticide should also be recommended by provincial authorities. Consult them for specific advice.