



## BLACK KNOT OF PLUM

Black knot, caused by the fungus *Apiosporina morbosa*, is a serious disease of plums and prunes in plantings and also occurs on cherry trees. This disease was first described in 1921 in Pennsylvania and subsequently was reported from other plum growing areas. Losses to black knot in commercial orchards usually are not extensive, except where the disease has become established. Once the disease established on susceptible cultivars, it is difficult to control it. Plum cultivars differ in their susceptibility to black knot disease.

### Symptoms

The disease affects only woody parts of trees, primarily twigs, and is characterized by elongated swellings  $\frac{1}{2}$  to 12 inches (1.5-30 cm) long and 1 to 3 inches (2.5-7.5 cm) in circumference (Figure 1). Newly formed knots have greenish, soft tissue. In summer, the young knots turn darker. By fall, they become hard, brittle, rough and black. During the following growing season, the knots enlarge and gradually encircle the twig or branch. Older knots are gradually riddled by insects and invaded by secondary fungi that give old knots a white or pinkish color.



*Figure 1. Symptoms of black knot on plums.*

### Life cycle

The pathogen overwinters in knots on twigs and branches or in the infected wood immediately surrounding them. The fungus produces ascospores in perithecia (Figure 2). In the spring, at the green-tip stage of bud development, ascospores are ejected into the air during rainy periods and are blown for moderate distances by wind currents. Rain is required for ascospore discharge and maximum discharge usually occurs between pink and 2 weeks after bloom. Only succulent green twigs of the

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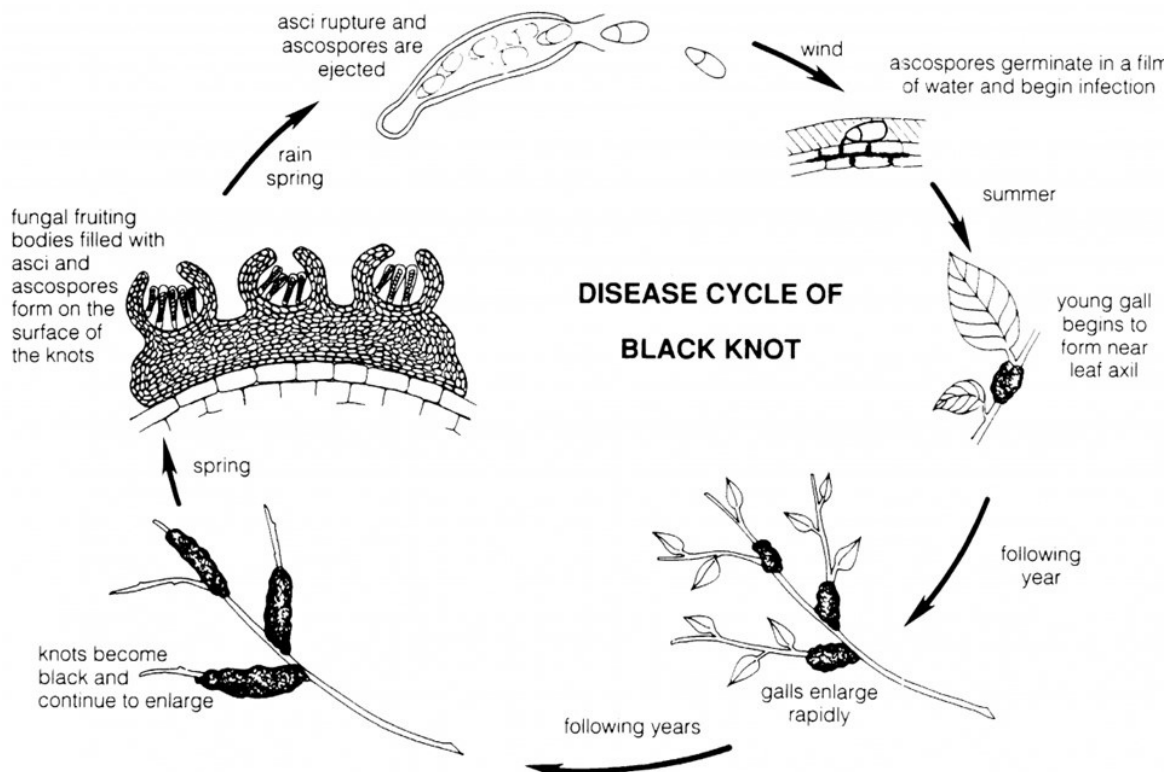
For further information contact **Mohammad Babadoost**, Extension Specialist in Fruit and Vegetable Pathology, Department of Crop Sciences, University of Illinois at Urbana-Champaign. (Phone: 217-333-1523; email: [babadoos@illinois.edu](mailto:babadoos@illinois.edu))

current season's growth are susceptible to infection. Twigs that remain wet for a sufficient length of time can be infected. Temperatures between 55 and 77°F (13-25°C) favor disease development. Symptoms are visible several months after infection. The first symptoms are visible by early autumn, but further development continues the following spring. The knots develop rapidly the second summer. Perithecia and ascospores are usually produced in two-year-old knot tissues. The fungus remain active in the tissues of the host throughout the growing season, extending the knots an inch or more each year.

## Disease management

Black knot is managed by integration of cultural and chemical methods. Infected plum and other trees and seedlings should be removed from orchard edges. Trees with black knots in the adjacent plum and cherry orchards should also be removed. The orchard and surrounding wood areas should be inspected each winter for knots and infected shoots and limbs should be pruned out. Infected parts should be cut five inches below the knot, as the pathogen may have extended beyond the visible swelling. Knots should be removed from the orchard and burned before bud break of trees, as the knots are a source of inoculum for new infection.

Application of fungicides without pruning and sanitation unlikely provides effective protection against black knot fungus. Fungicide application should be adjusted to inoculum level and weather conditions. Fungicides are applied during white bud through shuck split. Fungicides effective in one area are sometimes not effective in other areas. Captan, chlorothalonil, and benzimidazoles fungicides are commonly used for control of black knot. For up-to-date on fungicide management of black knot disease in Illinois and other states in the Midwest, refer to the Midwest Fruit Pest Management Guide (<https://ag.purdue.edu/hla/hort/documents/id-465.pd>).



**Figure 2. Black knot disease cycle. New York State Agricultural Experiment Station, Tree Fruit IPM, Disease Identification Sheet No. 6.**