

Black knot of *Prunus*

The fungus *Apiosporina morbosa* causes black knot.



Host Plants:

There are at least twenty *Prunus* species known to be susceptible to black knot, but the disease is most common on cherry, chokecherry, and plum.

Description:

The autumn after infection, infected portions of branches exhibit noticeable swelling, but the knot in the branch enlarges very rapidly during the second season. Black, rigid, elongate galls develop on branches by the end of the second winter of infection.



Black knot gall on cherry

Photos: (left) Tim Tigner, Virginia Department of Forestry, www.forestryimages.org. (right) K. D. Hickey, *Diseases of Woody Ornamentals and Trees*. APS Press.



Black knot gall on plum

The black knot fungus produces hormones that induce an increase in the number and size of xylem and phloem cells growing in infected parts of the branch. Infections often encircle twigs and branches causing stunted growth, distortion, and dieback of affected parts.

Disease Cycle:

It is not until two years after infection that the black knot fungus forms fruiting structures and releases spores (ascospores). Ascospores infect new shoots and occasionally fresh wounds during wet periods in the spring. Black knot infects large branches or stems via attached or adjacent shoots infected in previous seasons. After infection, the fungus grows under the bark causing no obvious symptoms for several months. When the tree goes dormant the growth of the fungus stops until the following spring when it resumes growth. By late the second summer, the bark may begin to rupture because of the increased swelling, and black fruiting structures develop. Fruiting structures release ascospores the following spring while wind and rain splash carry them to new green shoots.

Management Strategies:

Select *Prunus* trees resistant to black knot when growing them for fruit. Slightly susceptible to highly resistant cultivars include Formosa, Shiro, Santa Rosa, and President. Check susceptible trees annually and look for branches that have portions that are larger in diameter than adjacent parts of the branch. Remove knots or swollen parts at least three to four inches below the swelling. Removing inoculum from the tree is most effective when the swelling is visible but the knot has not erupted through the bark yet. Dispose of the debris away from *Prunus* trees because the black knot fungus can produce spores on pruned branches. In addition, removal of knots or entire susceptible trees from nearby sites improves the efficacy of black knot management on high value orchard and nursery trees. Chemical control is also a useful tool in the management of fruit trees. Apply fungicides during shoot elongation from when the buds break open through the end of active shoot growth to protect new shoots from infection during wet springs.

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