

## Black Knot

### *Apiosporina morbosa*

**I. Introduction:** Black knot is a very destructive fungal disease on susceptible cultivars of plum and prune. Losses in commercial orchards are sporadic; the disease is often found in poorly managed orchards, home plantings, or on abandoned and wild trees. This fungal pathogen is also occasionally found on apricot, peach, sweet and tart cherry, and ornamental *Prunus* spp. First described in 1821 in Pennsylvania, black knot is now generally distributed throughout North America. It was one of the most destructive diseases of plum and tart cherry in northern and eastern fruit regions during the late 1800s, but today is considered of less importance in most commercial orchards, except in blocks where it is well established.

**II. Symptoms:** The disease occurs only on the woody parts of trees, primarily on twigs and branches, and sometimes on trunks and scaffold limbs. The warty swellings first become visible on new shoots in late summer or the following spring. At first the knots are olive-green and corky, but with age turn black and become hard and brittle (photo 2-74). The knots vary in length from one inch to nearly one foot (2.5-30 cm). Many times they do not completely encircle the branch. Knots one year or older may become covered with a pinkish-white mold of another fungus and riddled with insects, especially the lesser Peachtree borer.



photo 2-74 - K. D. Hickey

**III. Disease Cycle:** Infections occur on new shoot growth, mainly from ascospores during periods of measurable rainfall of six hours or more at 72 F (22 C). Ascospores of the fungus are discharged from tiny sacs in the surface of the knots. Germination is very

low at 45 to 50 F (7-10 C), but increases significantly from 55 to 75 F (13-24 C). Very little infection is known to occur from conidia. Unwounded susceptible twigs may become infected soon after bud-break throughout the active shoot elongation period. Following infection, excessive production of parenchyma cells is pushed outward, forming the base of the knot. The first symptoms of infection are visible by early autumn, but further development continues the following spring. The knots develop rapidly the second summer, and the layer in which the ascospores are formed develops during the second winter after infection is initiated. The fungus in the woody tissues continues to grow in the spring and fall, increasing the length of the knots. Their eventual size depends greatly on the species and cultivar of the host plant.

**IV. Monitoring:** During the dormant period, monitor in a block that includes a susceptible cultivar, such as 'Stanley'. Observe ten vegetative terminal shoots on each sample tree for small, developing knots (photo 2-74). Presence of any black knots represents high risk on susceptible cultivars. Awareness of black knot inoculum from adjacent commercial orchards or wild hosts may affect control decisions.

Continue to monitor for black knots (photo 2-74) during the bud-break to bloom period by examining ten vegetative terminal shoots on each sample tree.

**V. Management:** Control of black knot requires a combination of cultural and chemical methods. Cultural practices should include removing wild plum and cherry seedlings from fence rows, woodlots, and along orchard perimeters; inspect orchards and surrounding areas each winter for black knots and prune out infected shoots and limbs; remove pruned knots from the orchard and bury or burn them before budbreak in the spring. When pruning infected material in the dormant season, always make the cut 3 to 4 inches below the margin of each knot, since the fungus grows in the tissue beyond the visible swellings. Consult your local Extension Service for fungicide recommendations since there appears to be some variation in effectiveness from one area to the next. Sprays should be applied from white bud through shuck split (green tip through second cover in problem orchards). Spraying by itself, without implementing the recommended cultural practices, may not provide adequate control of the disease. There is considerable variation in cultivar susceptibility to black knot.

**TEXT PREPARED BY K.D. HICKEY AND A.R. BIGGS**

**READ LABELS CAREFULLY AND USE CHEMICALS IN ACCORDANCE WITH LABEL CAUTIONS, WARNINGS, AND DIRECTIONS. REQUEST A MATERIAL SAFETY DATA SHEET (MSDS) FROM THE MANUFACTURER FOR EACH PRODUCT YOU USE.**

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