

32. Black Knot of Cherry and Plum

David S. Wysong and Mark O. Harrell

Increased interest in prune and plum production in the Midwest has made black knot, caused by the fungus *Apiosporina morbosa* (= *Dibotryon morbosum*), of concern to commercial fruit growers.

Hosts and Distribution

The two major plum varieties grown in the Midwest, Stanley and Damson, are susceptible to the black knot pathogen. Bluefire is also susceptible. Varietal susceptibility tests in Pennsylvania show Shropshire to be highly susceptible also. Methley, Milton, Early Italian, Brodshaw, and Fellenburg were moderately susceptible; Shiro, Santa Rosa, and Formosa were slightly susceptible in these tests. President is apparently resistant to the black knot fungus. Black knot is severe on wild plum (fig. 32-1) and cherry seedlings (fig. 32-2), but the disease is not known to occur on commercial cherry trees. However, infected wild hosts are important because the fungus can spread from areas containing diseased plants to the commercial or backyard plum planting.

Symptoms and Signs

The disease is characterized by production of elongated swelling or knots on the limbs of susceptible cherry and plum. These corky outgrowths predominate on small twigs and branches and on the trunk. Knots, which are longer than wide, may reach 1 foot or more in length.

Knots are greenish and soft when newly formed, but they become hard and black with age (fig. 32-3). Old knots may be covered with a white or pink parasitic fungus during the summer, and may be infested with insects.

Disease Cycle

In spring, when about 1 inch of new growth is present, spores are initially discharged from fungal fruiting bodies along the surface of the knots. Spore discharge is moderate to heavy from pink blossom stage to 2 weeks after bloom, and ends about the time terminal growth stops. Rain is required for spore discharge. Spores are carried by wind and rain to the site of infection, where



Figure 32-1. Black knot of American plum.



Figure 32-2. Black knot on chokecherry.

they germinate. The fungus penetrates unwounded surface tissue. Infection is most severe when moist conditions are accompanied by temperatures between 55° and 77° F.

Knots appear several months after initial infection. Some knots are visible by late summer; others do not appear until the following spring. At least 1 year, and usually 2, are required before new knots produce mature fruiting bodies. The knots continue to grow during the fall and early spring months, and may reach several inches in length.

Damage

Fruiting capacity of hosts is markedly reduced when the disease is not controlled because extensive pruning is required to remove diseased branches.

Control

Plans to prevent disease build up in new plantings should be developed before the orchard is established. Wild plums and wild seedling cherries should be removed from fence rows and nearby wooded areas. Establish and maintain at least a 600-foot border free of wild hosts. Do not plant new plum trees next to old plantings with black knot. These simple precautions will greatly reduce disease problems and increase orchard longevity. Once established, the plantings and surrounding wooded areas should be inspected annually for black knot. Infections are more difficult to find in mid-August; however, removal of knots at this time is desirable because they are generally fully extended. Cuts should be made 2 to 3 inches below the swelling. Remove knots on the trunk or main branches by cutting away the diseased tissue down to the wood and at least one-half inch outward beyond the margin. When infection is severe, do not remove knots until late winter or early spring so as not to promote excessive vigor. Because the fungus may have extended beyond the swelling, cuts should be made well below the visible infection. Gather and remove the knots from the orchard floor and burn before April 1st since they can be a source of inoculum if left where they fall.



Figure 32-3. Newly formed knots adjacent to old knots.

Sanitation measures usually control the disease adequately, but may be supplemented with a fungicide program if the disease is unusually difficult to control. Spraying, if done in conjunction with a sanitation and pruning program, will help prevent the disease, but spraying alone will not provide satisfactory control. The most effective times to spray are green tip, bloom, petal fall, and shuck fall. Additional sprays, until terminal growth stops, may be necessary under severe conditions. Fungicides registered for use in the control of black knot include:

1. Lime sulfur – One half pint (236 ml) of 30.0 percent solution per gallon of water.
2. Tribasic copper sulfate – One to 1.6 pounds metallic copper equivalent of a wettable powder formulation plus 8 to 12 pounds of hydrated lime suspended in 100 gallons of water.

Selected References

- Agrios, George N. *Plant pathology*, second edition. New York: Academic Press; 1978. 703 p.
- Anderson, Harry Warren. *Diseases of fruit crops*. New York: McGraw-Hill; 1956. 501 p.
- Childress, Adele M. *Diseases in the home orchard*. Ext. Bull. E-1439. East Lansing: Michigan State University; 1981. 8 p.