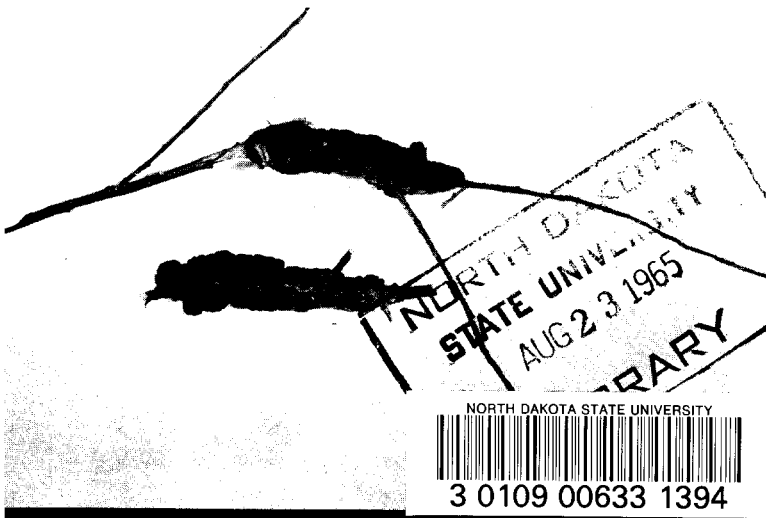


BLACK-KNOT of plums and cherries

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Black-knot appears in the fall as small swellings on branches and twigs of susceptible plum or cherry trees. The first small black-knots may appear in the crotches of limbs and young branches, on small fruit spurs, and near the tips of twigs. Black-knot attacks the woody parts of the tree. By gradually girdling, the fungus can kill a twig or limb beyond the knot and thus reduce the value of the tree. Infected twigs usually die about a year after the attack, but larger branches usually resist the attack of black-knot for several years before dying. Infected trees decline as the severity of black-knot increases.

Black-knot is caused by the fungus Dibotryom morbosum. This fungus attacks American, European and Japanese varieties of cultivated and wild plums and cherries. The disease is found throughout North Dakota, in home orchards and in wild plum and cherry thickets. Black-knot can be controlled by pruning and spraying.

Symptoms

The common name black-knot describes the final stage of this disease. It's first symptoms are small, light brown swellings on the twigs or branches in the first fall or spring after infection. In the second year these swellings enlarge. An olive-green, velvety growth soon covers the surface. As the summer progresses, the green color of the young black-knot gradually fades, turns dark in color, which by fall becomes hard, brittle and black in color. Every season the black-knot enlarges, growing along the infected branch or twig.

Black-knot galls vary in size from a few inches to over 12 inches in length. Thus, when black-knot appears, it may spread over the entire

tree slowly weakening the tree until it loses its productivity and, eventually, dies.

Life cycle

This fungus, Dibotryom morbosum, like other common fungi, propagates itself by spores. In the spring, spores are produced on the surface on the black-knots and may be discharged for several weeks. Infection takes place in a short time, usually between bud break and shuck split. These spores germinate and penetrate the bark or wounds and the primary infection which is not visible until fall then takes place.

After infection, a light brown swelling develops late the same year or the following spring. The next year, the swelling produces spores on its olive-green surface. During April, May and early June, wind and rain spread the spores to twigs on the same tree or to nearby trees. The spores germinate and infect the young twigs. During the late spring and early summer, more black-knot-producing spores are liberated from the surface of the young knots. The velvety olive-green appearance of the young knots in the early summer is due to the development of a spongy, spore-producing layer of the black-knot fungus. The "summer" spores are produced in great numbers and also are capable of starting more black-knot infections.

By the second winter, these knots are coal-black. Fruiting structures exist under the surface of the knots. These structures contain many sacks which hold the spores. Spores are ripe when the trees resume growth in the spring. During rainy weather, the spores are discharged into the air and are carried by air currents to new growth. This discharge of spores can occur in April, May and early June.

Spores come from two sources: (1) Young knots covered with the olive-green velvety growth and (2) older coal-black knots.

The black-knot fungus is perennial within the tissue of the old knots and will extend their growth year after year. Eventually, these knots will girdle the branch and kill it above the knot.

Control

Black-knot control consists of: (1) Eradication of the infected plant parts by pruning and burning, and (2) protection by spraying. Spray alone will not control this disease. If a tree is covered with knots, it is better to destroy it than to attempt treatment.

Perennial black-knot cankers are a constant source of spores that may cause new infections. For this reason, elimination by pruning black-knot cankers as soon as they appear is the first step in preventing serious damage. Pruning should be done during the dormant period of tree growth. On large mature branches or trunks, cut the knots out with a knife or chisel. Include an inch of healthy bark around the knots in these cuts. Cover the wound with a grafting compound or wound dressing. Check your trees in April and June for knots missed during pruning. Burn all cuttings of infected plant parts. Spores can develop and spread from these knots, even though you have removed them from the tree.

Spraying

The correct timing and thorough application of the following sprays are essential for control:

Time of Application	Material	Amount to mix with water to make:	
		1 gallon spray	100 gallons spray
Dormant	Liquid lime sulfur	1½ cups	10 gallons
	or dry lime sulfur	½ cup	- - -
	or Zineb	2 tbsp.*	2 pounds
Pink	Zineb	2 tbsp.	2 pounds
Bloom	Liquid lime sulfur	6 tbsp.	2 gallons
	or dry lime sulfur	8 tbsp.	- - -
	or Zineb	2 tbsp.	2 pounds
Shucksplit	Same as bloom schedule		

* tbsp = tablespoons

