Mummy Berry Disease of Blueberries
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Mummy Berry Disease of Blueberries

By G. R. Hooper, Department of Botany and Plant Pathology

Mummy berry is the most serious disease of Michigan highbush blueberries. The disease causes direct loss of fruit and may also reduce the bearing surface of affected bushes by causing repeated annual leaf and twig blights.

In Michigan, occurrence of the disease has been irregular. Blueberries have been nearly free from damage some years and suffered severe outbreaks other years. In 1969-1970, the disease was quite widespread, but no actual loss figures are available. British Columbia losses in 1969 were calculated at eight percent of the crop in susceptible varieties.[1] Michigan losses probably exceeded those reported for British Columbia since most of our acreage was planted to susceptible varieties.

How To Recognize

Mummy berry disease, like many plant diseases, occurs as a series of interrelated events. Symptoms of each phase of the disease may be observed by growers but not necessarily recognized as part of the same disease. This is because they occur at different time periods in the spring and summer (follow Fig. 4).

Fungal Fruiting Bodies (Mushrooms)—The first sign of mummy berry disease is the appearance of small (one-inch tall) trumpet-shaped mushrooms (Fig. 1). These mushrooms, called apothecia, appear in mid or late April, growing from "mummified" blueberries on the soil. These mummified blueberries are the rem-

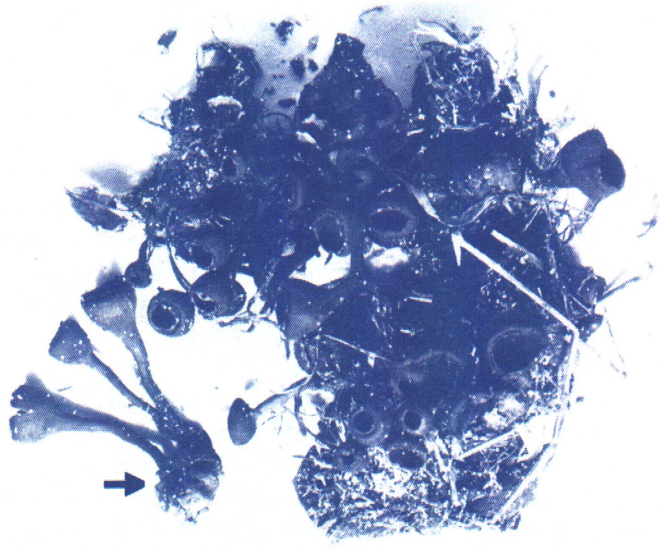

Figure 1. Mushrooms (apothecia) scooped from debris under blueberry plant. Note origin of several mushrooms from one mummied berry (arrow).

[1]H. S. Pepin and H. N. W. Toms. 1969. Economic loss from Mummy berry of highbush blueberry in Coastal British Columbia, 1969. Canadian Plant Disease Survey 49(4):105-107.

Figure 2. Blight of twigs on variety Earliblue. Blight resulted from ascospore infection in late April.

nants of last year's disease. Many growers fail to see the mushrooms due to their small size and brown color. It is often necessary to get down on your hands and knees and scrape the debris away to see them.

Leaf and Bud Blight Phase—Shortly after the appearance of the mushrooms, leaves and flower truss buds wilt, turn brown and die (Fig. 2). This blight is caused by tiny spores (ascospores) which are discharged from the mushrooms. The ascospores land on tender young tissues and germinate into a fungus growth that enters and kills the plant tissues. In severe infections, hundreds of dead leaves and shoots cover each plant giving it a scorched or frosted appearance. The dead tissues remain on the plants for a number of days and then fall off, leaving a normal appearing foliage.

Flower and Fruit Infection—Before the blighted twigs fall off the bushes, a secondary cycle of spore production is initiated by the fungus. Conidia are formed on the blighted surfaces and blow or splash onto opening flowers. Here the fungus spore germinates and grows into the developing berries. This infection is not apparent until the fruit begins to ripen. Then, infected fruit fails to color normally and becomes pale pink to gray white while normal fruit is blue (Fig. 3). Affected fruit soon falls to the ground and are very light in weight and white colored inside. On the ground, they dry into mummies and remain overwinter as the source of next year's mushrooms. Then, the cycle starts all over again.

Conditions Favoring the Disease

The fungus that causes mummy berry disease is called *Monilinia vaccinii-corymbosi.* It is a close relative of the fungus that causes brown rot of stone fruits and shares certain habits with this fungus.

The advent of warm spring days causes dormant fungal cells in mummified berries to start to grow. The fungus forms mushrooms that open like trumpets during favorable days and discharge the infective ascospores. If the weather is dry or too hot, the mushrooms soon die. The ascospores must land on very young plant tissues before a protective, waxy layer covers the plant surfaces. Infection does not occur if the plants break bud earlier or later than the fungus produces mushrooms or if weather conditions do not favor the fungus.

Likewise, production of conidia from blighted twigs requires moist conditions and these spores must land on open flowers. Weather conditions sometimes prevent fruit infection, even though the twig blight was severe. Unfortunately, weather cannot be counted upon—Michigan spring weather usually favors the fungus and not the plant.

Control of Mummy Berry Disease

As already pointed out, there are three phases of the disease—mushroom production, primary or blight phase, and secondary or fruit phase. Control mea-

Figure 3. Cluster of blueberries affected by mummy berry disease. Diseased fruit (arrows) is smaller and lighter in color than normal.

sures can be aimed at: a) stopping mushroom production or discharge; b) stopping secondary spore production; or c) protecting the plant from either twig or fruit infection phases.

Prevention of mushroom production or discharge can be accomplished by sanitation—removal or burial of mummified fruit. On small plantings or where labor is available, the berries can be raked into the centers of rows and disked under. However, at least two inches of soil must cover the berries, or the mushrooms will grow through the soil to the surface.

Another method used against this phase of the disease is chemical "burning" of the mushrooms. Various herbicides and caustic agents are listed in the current recommendations of MSU's "Fruit Spraying Calendar" (Extension Bulletin 154).

Even though some chemical sprays will prevent blighted twigs from producing secondary spores, this is a difficult task.

Certain fungicides have proven effective in protecting plants from both blight and fruit infection. These compounds change from year to year as new products are tested and cleared for use on blueberries. Consult your Cooperative Extension Agent or the Fruit Spraying Calendar for a current list of recommended fungicide schedules.

Blueberry varieties differ in susceptibility to infection by the fungus. This difference is due to several things, including time of bud break and flowering. Some varieties are resistant to primary (blight) infection, but susceptible to secondary (fruit) infection. Other varieties are susceptible to primary infection but show resistance to secondary infection. Susceptibility also varies from one blueberry growing region

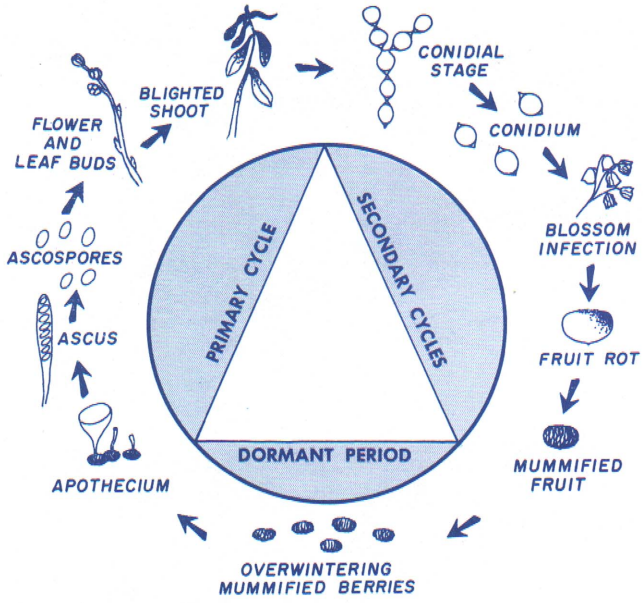

Figure 4. Life Cycle

to another, if weather and other conditions differ markedly.

In Michigan, the varieties Rancocas, Rubel, June, Weymouth, Bluecrop, Berkeley, Blueray, Earliblue, and Jersey are considered susceptible to mummy berry disease.

The varieties Coville, Collins, Darrow, and Bluetta show some resistance but should not be considered capable of resisting infection where no control measures are employed.

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