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How to Recognize and Control Strawberry Fruit Rots
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**How to recognize
and control**

Strawberry Fruit Rots



**Michigan State University
Cooperative Extension Service
East Lansing**

Strawberry Fruit Rots

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A disease survey of Michigan strawberry plantings disclosed that fruit rots caused by far the greatest loss to the growers. One reason for this is that all of these various rots have one trait in common—they can infect a berry in any stage of its development, from green to ripe.

The grower should be concerned about rots but not alarmed, because occurrence of rots in any field will vary from year to year depending upon local weather conditions. Prolonged rains and moderate temperatures are required for extensive rot outbreaks.

Identifying Fruit Rots

Proper identification of the rots present in a planting is essential for carrying out an effective control program. The important strawberry fruit rots common to Michigan show certain characteristics that will aid in this identification.

Gray mold (*Botrytis cinerea*)

This fungus infection starts as a light brown spot which is watery at first but which never leaks. The pulp under this spot turns dark brown. Soon the berry becomes dried out, mummifies, and is covered with a gray dusty powder—the spores of the fungus.

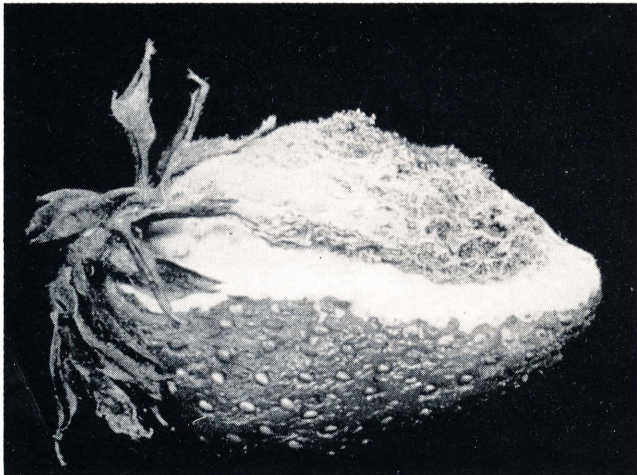


Fig. 1. Gray mold.

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There is NO distinct line between healthy and diseased strawberry fruit tissues. *Botrytis* may also attack the strawberry blossoms, flower stalks, and leaves, turning them brown.

Stem-end rot or hull rot (*Dendrophoma obscurans*)

This fungus attacks the sepal or cap of the berry first, turning it brown. The infection progresses down under the cap into the stem-end of the fruit. The pulp of the berry turns brown, soft, and watery.

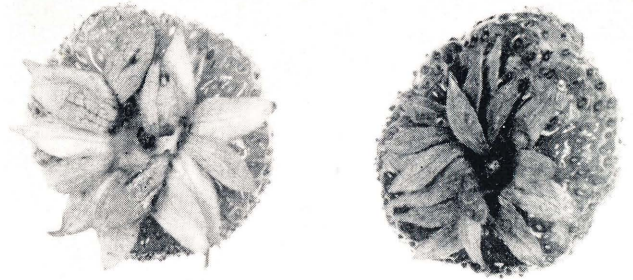


Fig. 2a. Left, healthy caps; right, cap infected with stem-end or hull rot.



Fig. 2b. Berries sectioned to show: left, healthy berry; right, berry showing distinct line between diseased and healthy tissues.

There IS a distinct line between good and diseased tissues. *Dendrophoma* may also attack leaves, causing an egg-shaped or pie-shaped brown spot to form. This is called leaf blight.

Rhizoctonia brown rot (*Rhizoctonia* species)

This is a soil-borne rot; infection starts where the berry comes in contact with the soil. The rot is dry, spongy, and dark brown to black in

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Fig. 3. Rhizoctonia brown rot.

color. It generally results in a one-sided berry, the upper side developing normally while that in contact with the soil is rotting.

Rhizoctonia rot develops slowly in the fruit so there IS a distinct line between healthy and diseased tissues.

Leather rot (*Phytophthora cactorum*)

This is another soil-borne fruit rot which results in a brown, water-soaked spot on green berries and in shades of brown to purple on maturing berries. These spots are softened but tough and leathery. The vascular strands or arteries of the berry are deeper brown than the pulp. A white mold growth may form on the surface of the berry.

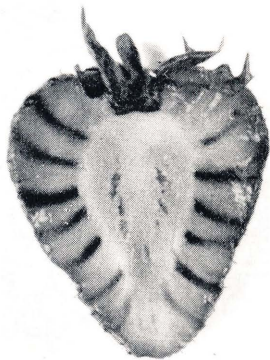


Fig. 4. Leather rot.

TABLE 1—Spray control program for strawberry fruit rots

Time to Apply	Materials	Amount* to use in:		Remarks
		1 gal. water	100 gals. water	
1. Dormant to Delayed Dormant	Lime-sulfur Liquid or Powder or Organic mercuries	7 T.	2½ gal.	Not effective through mulch, because infected overwintered plant parts must be thoroughly wet by spray to eradicate infection. IF plants are well-advanced before mulch is removed, eliminate this spray , as injury may result. Commence sprays with #2.
		10 T.	Not practical in large quantities.	
2. When new leaves are fully expanded and blossom buds are visible	Use any one of the following: Ferbam or Zineb or Ziram or Captan	1½ T.	1½ lb.	Protective sprays at this time aid in further reducing primary infection.
		1½ T.	1½ lb.	
		2 T.	2 lb.	
		2 T.	2 lb.	
3. Pre-Bloom to Bloom	Same as #2.	Same as #2.		In wet seasons, gray mold may attack blossoms, leaves and developing fruit, which may result in extensive fruit infection prior to and during harvest.
4. When berries are ⅓ grown	Same as #2.	Same as #2.		
5. Pre-Harvest (3 days before harvest)	Captan	2 T.	2 lb.	Apply this spray if gray mold is quite evident and extensive rains are predicted.

* Abbreviation in table: T. stands for tablespoon

There is NO distinct line between healthy and diseased tissues. Leather rot-infected berries are BITTER to the taste.

Control Measures

Cultural program

Control the soil-borne rots, rhizoctonia and leather rot, by mulching the planting. This will prevent the ripening berries from coming in contact with the fungus-contaminated soil.

Spray program

Control gray mold and stem-end fruit rots economically by following the spray schedule in

Table 1. You can also control diseases that may attack the leaves and stems, namely leaf blight and leaf spot, by using this spray calendar. Time the sprays with the development of the strawberry plant and apply within a day or two BEFORE predicted rains.

REMEMBER, **complete spray coverage** of strawberry rows is essential for good control.

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