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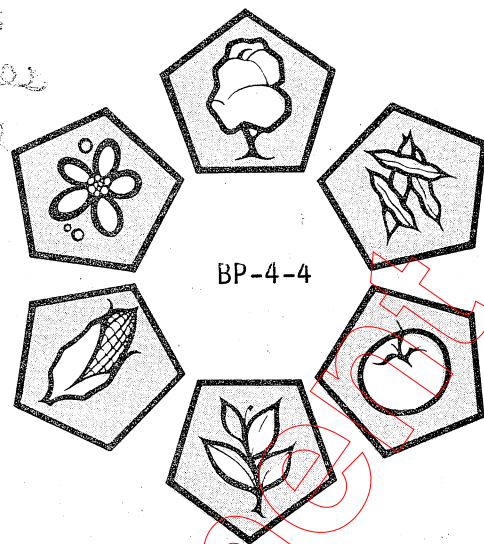
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Purdue University
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Plant Disease Control



BP-4-4

Strawberry Root Diseases

Paul C. Pecknold, Extension Plant Pathologist

Every year Indiana strawberry growers are puzzled by areas of dead plants in their strawberry plantings. These areas vary from a few plants to the entire planting. Often this is the result of strawberry root diseases -- either black root rot, red stele or Verticillium wilt.

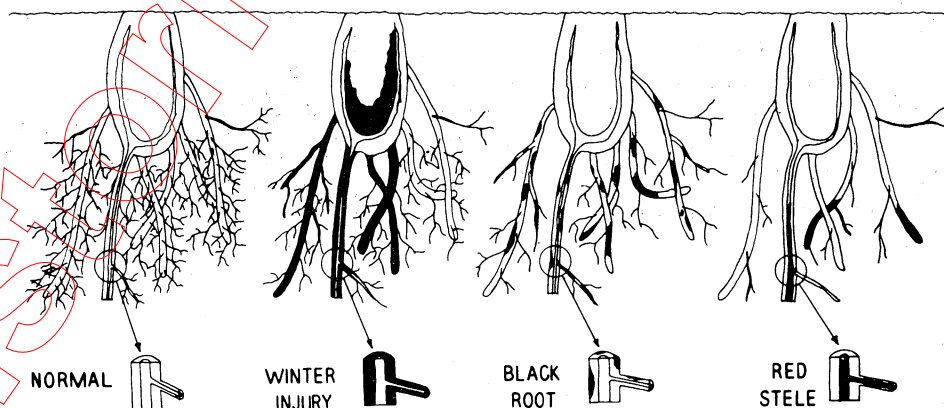
Black Root Rot

This is the most common of all root diseases. It is caused by a complex of soil inhabiting fungi and nematodes.

Adverse conditions such as winter injury, fertilizer burn, herbicide injury, nutrient deficiency, drought, or excess water are also thought to be involved.

This disease usually occurs in the spring. Around picking time plants suffering from root rot start to wilt, the leaves turn brown, and the plant dies. Affected plants show brown to nearly black roots which dry out and die. These roots are much smaller than normal.

BLACK
ROOT-ROT



Symptoms of black root-rot compared with other root disorders.
(Courtesy Department of Botany and Plant Pathology and Cooperative Extension Service, Michigan State University).

Care in selecting planting sites may help avoid black root rot. Avoid heavy or poorly-drained soils. Do not replant strawberries on the same site until after at least a 2-year rotation. Use only sound, white-rooted planting stock. Soil fumigation may help temporarily; consult your Cooperative Extension agent for details on soil fumigation.

Red Stele

This disease is caused by a fungus which thrives in cold, wet soil and is therefore most apt to occur in low, wet areas of the field. In a plant infected with red stele the center (or stele) of the root is a distinctive brick-red instead of the normal yellowish-white. The discoloration may extend the length of the root but not into the crown. Other symptoms of red stele are poor growth and wilting of plants, older leaves turning yellow or red, and stunted plants.

To keep the disease out of a new planting, avoid planting infected stock. Examine the planting stock carefully. If any roots have a "rat-tailed" appearance, cut them lengthwise and look for the red stele. Avoid setting plants in heavy soils or in poorly-drained areas. The practical method for controlling red stele is to plant resistant varieties. See Table 1.

Verticillium Wilt

Another soil-borne fungus is the cause of this disease. Symptoms often appear about mid July when outer leaves suddenly wilt and dry up. Growth of new leaves is retarded. Diseased plants are often scattered throughout the field in a random pattern.

The chief means for control is to grow resistant varieties; see Table 1. Also, do not grow susceptible varieties in soil previously occupied by plants highly susceptible to Verticillium, e.g., tomato, eggplant, pepper, melon, okra, potato, mint, brambles.

Table 1. Resistance of strawberry cultivars to Red Stele and Verticillium

Cultivar	Red Stele	Verticillium
Apollo	S	S
Badgerglo	S	S
Blakemore	S	R
Cardinal	S	Unknown
Catskill	S	R
Comet	S	Unknown
Darrow*	R	S
Delite*	R	R
Earlidawn	S	S
Earliglow*	R	R
Guardian*	R	R
Holiday	S	S
Marlate	S	S
Midway	R	S
Pocahontas	S	S
Raritan	S	S
Redchief*	R	R
Robinson	S	R
Sunrise*	R	R
Surecrop*	R	R
Sparkle	R	S
Tennessee Beauty	S	R

S = Susceptible, R = Resistant.

*Resistant to several races of the red stele fungus.