

Plant Disease Updates

Diagnosing Strawberry Crown and Root Issues

Common causes of plant collapse and death

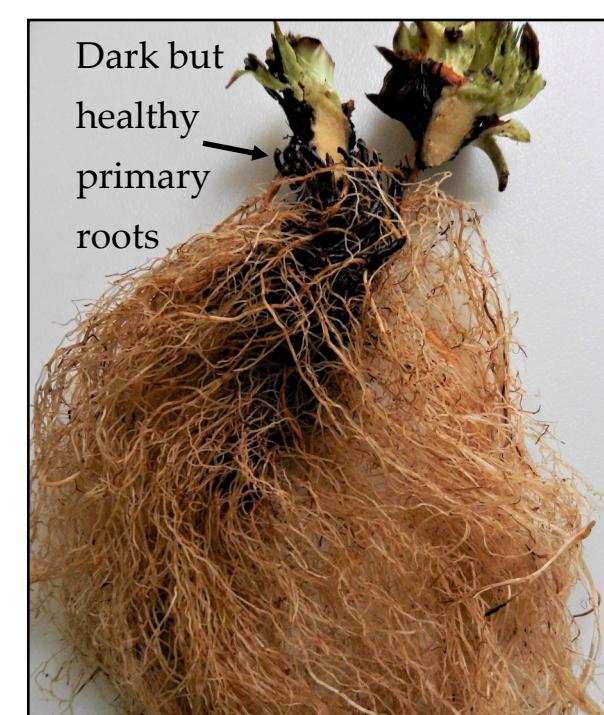
Diseases, insect feeding, and winter injury can damage strawberry roots and crowns. At first plant growth will usually be reduced, or plants may wilt and recover, but often the problem is not apparent until the plants quickly collapse and die during the stress of fruit production.

What's normal in a healthy plant?

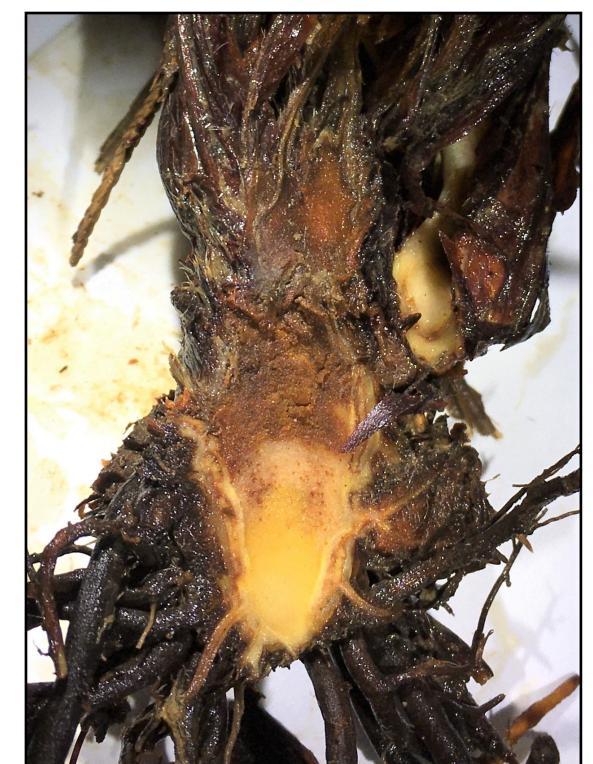
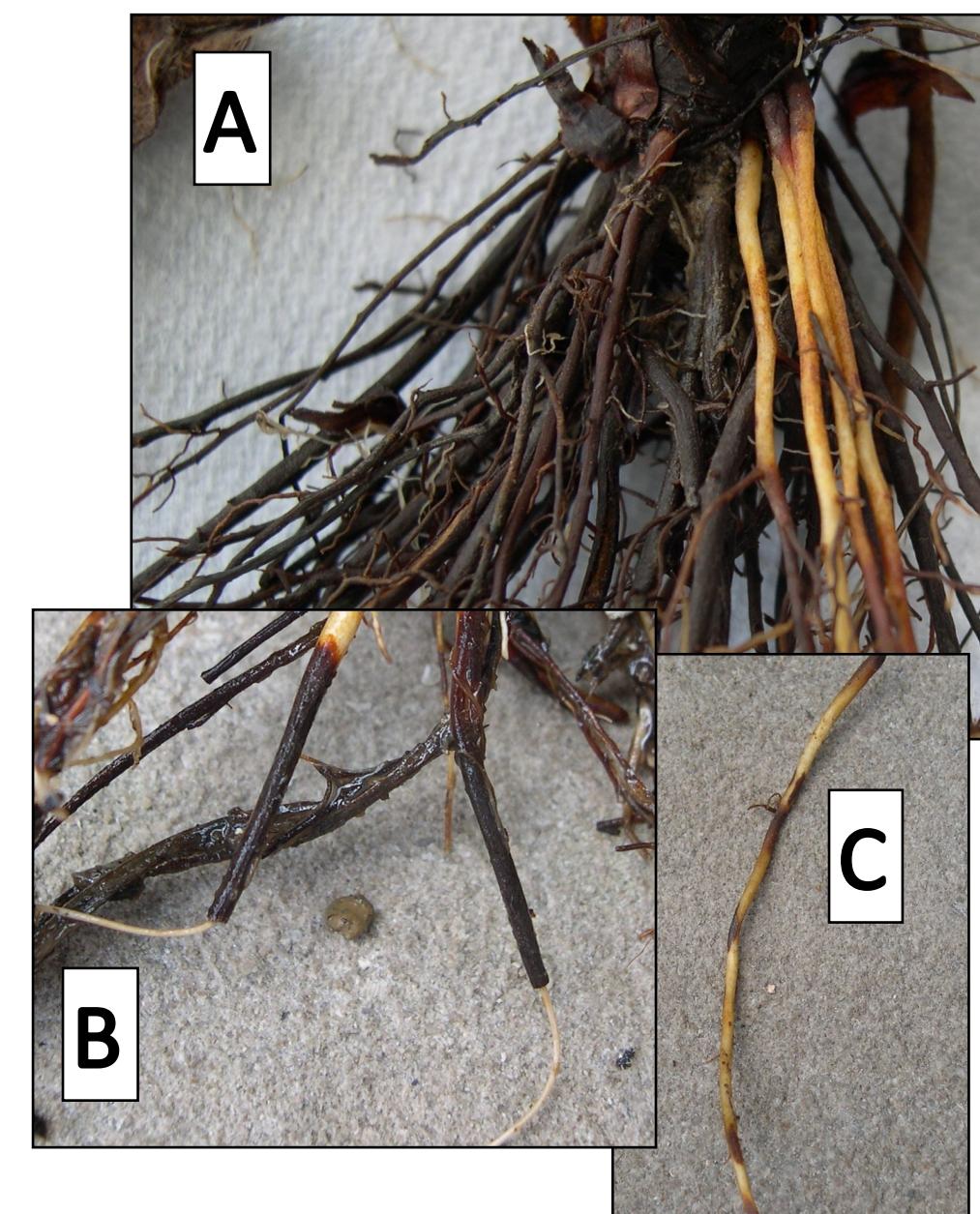
Healthy crowns and new primary roots will be white or cream-colored throughout when first cut. Once the crown is cut open and exposed to air, it will quickly darken, at first becoming more golden in tone and then reddish-brown.

The surfaces of healthy primary roots darken as the roots age and a protective layer is formed. These primary roots grow many lighter-colored secondary ("feeder") roots when healthy.

What's not normal? Red stele (right) is caused by a soil-borne Phytophthora species and is more common in low spots and wet areas. As indicated by its name, the core (stele) of the root is red. "Rat-tail" roots are also diagnostic.



Black root rot (above) is a disease complex. Primary roots blacken, but unlike healthy roots, also soften and produce few or no feeder roots (A). The surface may slide off when tugged leaving the white core (B). Dark areas may be seen on healthy roots as they begin their decline (C).



Phytophthora crown and root rot (left) is caused by a different fungal species than red stele, and is becoming common, perhaps due to varietal susceptibility. This infected plant is 'Flavorfest'. Symptoms typically appear first in the upper portion of the crown.



Neopestalotiopsis (right and below) is a new disease that can cause a crown rot, a leaf spot, and a fruit rot. Symptoms will be seen on leaves first. Anthracnose crown rot can look similar though leaf spot symptoms are minor in comparison.

Winter injury (above) is a part of the black root rot complex. Symptoms, seen in late winter or spring in the starchy central crown area, range from brown flecking (mild) to reddish brown discoloration (severe). If over half of the crown tissue is affected, yields will be reduced, but plants may recover and yield nearly normally otherwise.

Below left: An unidentified crown rot likely traveled inward from the roots.

Below right: Possible anthracnose crown rot, which can cause marbling.



In Summary: It can be difficult to sort out reasons for plant decline. There can be multiple causes of crown and/or root damage and death, and several of these may be present at the same time. When diagnosing the problem(s), look for other symptoms that may provide clues, and check multiple plants. Plants should be carefully dug to preserve fine roots. Try to rule out (or in) causes based on field history, variety and timing of symptom appearance. Consult with your local extension educator for assistance and treatment recommendations. A sample may be submitted to a diagnostic lab such as Penn State's Plant Disease Clinic as needed.



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