Phytophthora

Phytophthora cactorum, Phytophthora fragariae

Damage:

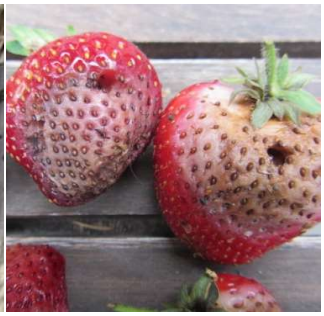
Phytophthora commonly infects roots and crowns, causing general plant stunting and sometimes whole plant collapse. It can also infect flowers and developing fruit, causing leather rot. Failure of transplants to grow well after transplanting, and wilt/death of young plants are often caused by phytophthora. Its presence in roots causes a yield drag without obvious above ground symptoms – stunting is not always obvious unless there is an uninfected comparision. It is one of the more serious diseases in strawberry production.

Identification:

Stunted or collapsed plants

Brown lesions on actively growing

Healthy crown with white interior on left, infected crown on right



Fruit develops a dryish lesion, often with a bleached/pink appearance

When phytophthora is suspected because of plant stunting or transplant failure, first cut the crown and look for internal browning. A freshly cut crown should be creamy white inside, but will oxidize to a light tan colour in a matter of minutes. Phytophthora in the crown looks like a chocolate brown splotch, and fresh white root growth will be sparse. *P. fragariae* (commonly called 'red stele') infects the central conducting tissue of roots, turning it brown.

A diagnostic lab will be required to distinguish between crown rot caused by anthracnose and that caused by phytophthora.

Spread:

Phytophthora is a soil-borne pathogen, infecting plants through roots and flower/fruit through soil splash. Contaminated irrigation water or surface water run-off is another common source of phytophthora.

P. cactorum has a wide host range that includes many vegetable crops. A new strawberry field, first year out of pasture, is likely to have low levels of phytophthora, but pathogen levels build up over the first couple years of strawberry production.

The pathogen produces long-lasting resting spores that survive in the soil for years, as well as swimming spores that move through soil water to susceptible hosts. Wet years and poorly drained areas of the field will have more problems.

Control:	
Plant production	Start with healthy strawberry transplants, free of phytophthora. Soilless transplants should be phytophthora-free, but even soilless transplants can become contaminated in the propagation cycle unless extreme care is taken. Consider using varieties with resistance to phytophthora.
Pre-flower	Plant into blocks that have not had vegetables or fruit in the last several years, and where soil drainage is excellent. Fumigate soils where disease carry-over from previous crops is a problem. Strawberry transplants are commonly dipped in phosphorous acid pre-plant. Other drench materials are available, consult the current SGNZ product list.
Flowering and fruiting	Avoid soil splash by mulching soon after transplant, thereby preventing phytophthora spores from contacting fruit and preventing the resulting in leather rot.