

Lompoc

Row Crop Pest Management

Project



No. 14

**Damping-Off
Diseases**

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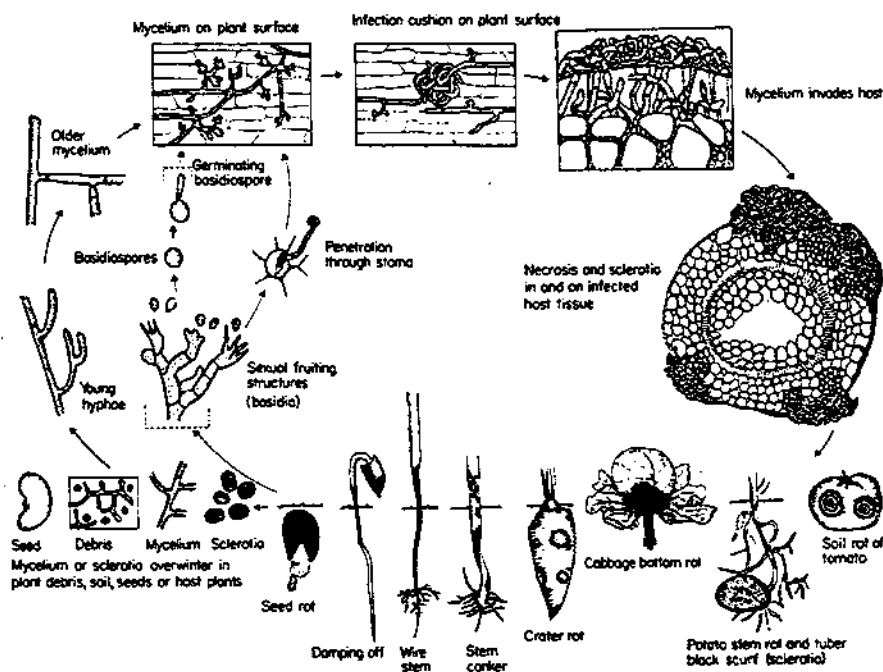
IPM Information Series

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Most pathogens that cause damping-off can also continue to cause disease as the plant

The two fungi that are most often associated with damping-off in Central Coast crops are *Rhizoctonia solani* (disease cycle shown in Fig. 1) and *Pythium* spp. (disease cycle shown in Fig. 2). *Rhizoctonia* is found in most agricultural soils, where it survives between crops on crop residues and as microsclerotia (Fig. 1, 7 o'clock). This pathogen usually attacks seedlings at or near the soil surface. Initial symptoms are stem lesions, which are brick red to brown and sunken. If the disease progresses, the stem may be girdled. "Stem canker," "soreshin," "wirestem" and "damping-off" are names associated with *Rhizoctonia* seedling and young plant post-emergence diseases. Damping-off and wirestem are frequent causes of transplant losses in cole crops on the Central Coast.



From Agrios 1997

Pythium spp. damping-off disease usually begins as a root rot. This group of fungi survive as oospores (Fig. 2, 7 o'clock) in the soil which germinate to attack root hairs and root tips causing a progressive deterioration of the root system. The seedling may wilt before above-ground lesions are evident or the seed may rot in the ground. *Pythium* is often present in pre-emergence damping-off. The *Pythium* may also progress into the lower stem and cause a mushy, watery stem and root rot which results in the typical post-emergence damping-off syndrome.

Other fungi, which are often associated with seedling or transplant damping-off, are *Botrytis cinerea* (see IPM Information Series No. 2), *Sclerotinia sclerotiorum*, and *S. minor* (see IPM Information Series No. 5), *Alternaria* spp. (see Information Series No. 13), *Phytophthora* spp., *Fusarium* spp., and *Thielaviopsis basicola*.

The environmental conditions which favor damping-off vary according to the pathogen. *Rhizoctonia* often causes injury to beans in the spring during germination. Cole crops transplanted in the fall often fall victim to wirestem

caused by *Rhizoctonia*. *Sclerotinia* and *Botrytis* damping-off can be severe during spring transplanting. *Pythium* spp. also tend to be most active during the spring months when soil temperatures are still cool and soil moisture plentiful.

Control of damping-off diseases is difficult during and after the disease has been identified in the field. Damping-off must be anticipated and prevented by using seed treatments and transplant treatments before the seed or plants are put in the field. In-furrow treatments at seeding and banded treatments over the plant line after transplanting can also be useful. Shallow planting of seed and seedlings so that less stem is exposed to the soil has been used to reduce losses from *Rhizoctonia* damping-off. Fungicides used for *Pythium* control, either as seed or seedling treatments, include metalaxyl, ethazole, some copper compounds, and captan. *Rhizoctonia*-caused damping-off may be suppressed with pentachloronitrobenzene (PCNB), chlorothalonil, benomyl, thiophanate methyl, carboxin, mancozeb, vinclozolin, and iprodione. Always refer to the product label for crop registration and dosage information.

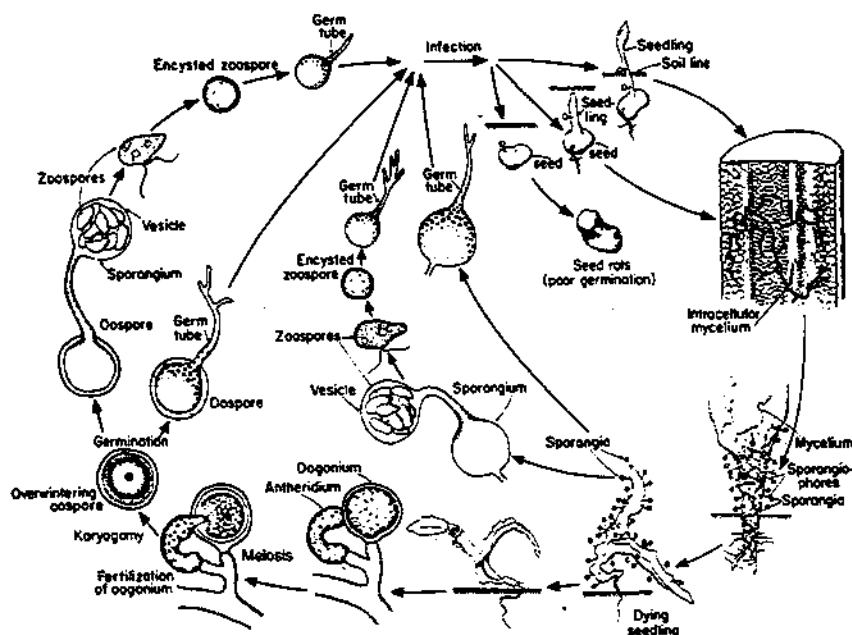


Figure 2. Disease cycle of damping-off and seed decay caused by *Pythium* sp.