

## Damping-off of seeds and seedlings

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Figure 1. Damping-off describes the death of seeds or seedlings

This is the time of year when growers begin planting seed—whether you are child planting a few seeds in Dixie cup for a school project, home tomato growers, or professional horticulturists. Unfortunately, one problem you may share in common is damping-off. Damping-off describes the death of seeds or seedlings and includes all of the following phenomena: Seeds that rot before they germinate, the newly emerging root (radicle) or shoot (cotyledons) of the seedling rots before emergence, or stems of seedlings (cotyledon) are attacked near the soil line, causing the young plants to collapse. Damping-off is caused by several fungi, including *Botrytis spp* and *Rhizoctonia solani*, and fungal-like organisms such as *Pythium spp.* and *Phytophthora spp.* These microbes are found in practically all soils and pose a large threat to plant propagation. Almost all species of plants can be infected, and these organisms also cause new cuttings to rot, as well.

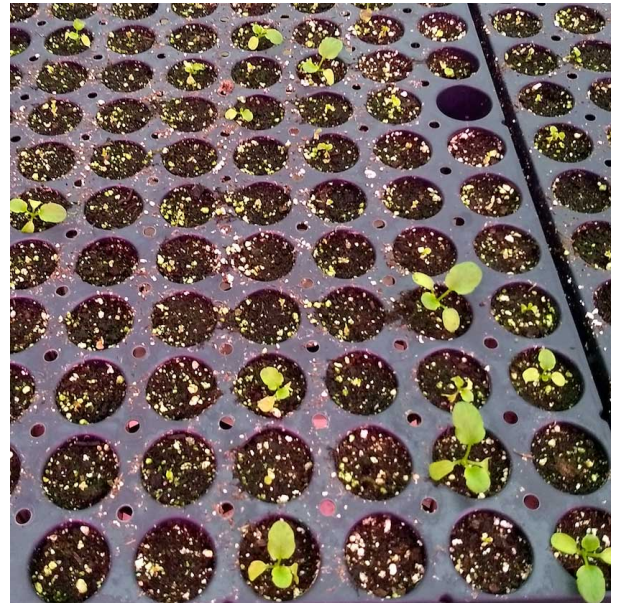


Figure 2. Seedling tray with damping off

**Symptoms.** In large flats or direct seeded gardens, damping-off commonly occurs in patches. Pre-emergent damping-off describes a seed rot (Fig. 1), or the death of the seedlings before they emerge from the soil. Post-emergent damping-off affects newly developed seedlings that have emerged from the soil (Fig. 2). Symptoms of post-emergent damping-off usually involve a dark stem rot near the soil surface that causes seedlings to collapse and rot.

**Management.** In this case, disease prevention is a cornerstone of management. If planting in the garden, sow seeds when temperatures are favorable for rapid seedling growth. When starting seedlings indoors or in a greenhouse, this disease can be avoided if seeds and cuttings are planted in sterilized, soil-less seedling mix or other planting media, using only sterilized containers. A soil-less starting mix composed of a peat moss/vermiculite/sand mix is preferable for starting seeds. Use clean water on the seeds, not stored rainwater or pond water. Remove any pots or flats with damping-off immediately to prevent the spread of this problem.

As always, promote healthy plant growth—Vigorously growing

seedlings are fairly resistant to infection. Follow planting instructions carefully—some seeds require light, a certain planting depth (or no depth!), soaking overnight, scarification (nicking the seed) and stratification (cold to induce germination). For plants that should not be covered, or require light for germination, plant seeds on soil, but cover with a light layer of sterile sand instead of soil. Provide good ventilation—moving air allows seedlings to dry and prevents the germination of *Botrytis*, or free water needed for *Pythium* or *Phytophthora* infection. Do not overwater, and follow instructions to thin seedlings appropriately. Yes—kill your darlings

to the recommended spacing to allow them to grow big and strong, and not topple over because they are spindly and weak!

Finally, if you are faced with persistent problems, consider using fungicide-treated seeds, adding captan to seeds prior to planting, or using a product like Banrot G incorporated into your growing media, which controls most root rot pathogens. Follow labeled recommendations as rates change depending upon type of seeds being treated. Keep in mind that certain seedlings (e.g., conifer) may be adversely affected by captan.

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