

How to Pasteurize Medium and Sterilize Containers and Tools

Seeds need adequate moisture and optimum temperatures for germination, but these conditions also encourage the spread of disease. To increase the survival rate for seedlings during germination, containers and tools should be sterilized and pasteurized or sterile soilless mixes should be used as growing medium.

Damping-off

One potential problem for gardeners who germinate seeds at home is damping-off, a fungus disease that infects seedlings. It is caused by pathogens such as *Pythium*, *Rhizoctonia* and *Fusarium* and its symptoms include the browning of stems at the soil line. Stems then shrivel, plants topple over, and seedlings die. Infection spreads rapidly, killing most of the seedlings in a tray or flat. Although it is more of a problem on over-watered seedlings in poorly drained soils, even seedlings in medium that drains well can become infected. Thus, it is important to start clean by disinfecting all tools and flats, as well as pasteurizing potting medium or using sterile soilless media to reduce the possibility of damping-off. For more information, refer to the fact sheet entitled: Damping-off of Seeds, Seedlings, and Cuttings (www.cas.psu.edu/docs/CASDEPT/PLANT/ext/damp_off.html).

Pasteurizing Medium

Potting media mixed by home gardeners should be pasteurized to kill weed seeds, soil-borne insects, and pathogens. Pasteurization destroys most organisms

and is done by applying heat until the soil reaches 180°F (82°C) for 30 minutes. When temperatures are raised above 212°F (100°C), most of the soil borne organisms are killed and the soil is considered sterile.

Gardeners can pasteurize homemade potting soils using a kitchen oven; however, a long-lasting earthy odor can develop in the oven. To pasteurize soil, preheat the oven to 180°F. Then fill a pan with about 4 inches of moist soil and cover it with aluminum foil. Insert a candy or meat thermometer to monitor temperature and place the pan in the oven. When the thermometer reads 180°F, leave the pan in the oven for 30 minutes longer, then remove it and allow the soil to cool. Seeds can then be sown in the soil, or it can be used as a transplant medium for seedlings.

Sterilize Containers and Tools

Efforts to pasteurize soil are in vain if contaminated tools, seed flats, or pots are used. Each should be disinfected by soaking it for 30 minutes in a 10% solution of chlorine bleach (one part bleach and nine parts water). Tools and containers should then be rinsed and allowed to dry before using them again.

Purchasing Pre-sterilized Potting Soil or Soilless Mix and Containers

Instead of pasteurizing soil in the kitchen, most gardeners have chosen to purchase either pre-sterilized, ready-mixed potting soil or sterile soilless mix. In addition, new plastic or fiber disposable trays

or flats can also be purchased, rather than washing and sterilizing previously used containers.

Prepared by Phyllis Lamont, consumer horticulture center library coordinator, Kathleen M. Kelley, assistant professor of consumer horticulture and James C. Sellmer, associate professor of ornamental horticulture

PENN STATE COLLEGE OF AGRICULTURAL SCIENCES
DEPARTMENT OF HORTICULTURE
102 TYSON BLDG.
UNIVERSITY PARK, PA 16802
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