

# HOT WATER TREATMENT FOR PLASTIC POTS

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Quite often it is desirable to re-use plastic pots, flats, and other plastic containers. Clay pots and certain kinds of plastic can be steamed, but most plastic materials used in plant production become soft and distorted when steamed or heated above 80° C. (176° F.). Chemical treatments can also be used to treat plastic and clay pots. Of the chemicals tested by Nichols and Joden (2), only formalin eliminated seven common plant pathogens from clay or plastic pots. Formaldehyde fumes from formalin are irritating to people and so formalin is not popular. Although sodium trichlorophenate solutions might be effective and possibly suitable for treating plastic containers, all traces of the chemical must be removed by repeated washing to eliminate possible residues that could damage plants.

Heating soils at 160° F. for 30 minutes frees them of all plant pathogens. This treatment time takes into account practical considerations like heat penetration into clods and plant residues. The actual time required to kill fungus structures, such as sclerotia, spores, and mycelia, at 160° F. can be a matter of seconds. For instance, sclerotia of *Macrophomina phaseoli*, a fungus that attacks crop plants under high temperatures and drought conditions, are killed by a 60-second exposure at 60° C. (140° F.) (1). Spores and mycelia of the geranium rust fungus are killed by exposure in hot water at 122° F. for 90 seconds (3).

To determine if short exposures in hot water would kill two common soil-inhabiting plant pathogenic fungi (*Pythium ultimum* and *Rhizoctonia solani*), dill seeds (*Anethum graveolens*) were sterilized and colonized with the two fungi. Ten dill seeds were placed in small cotton cheesecloth bags and immersed in hot water for 1, 2, and 3 minutes at 60°, 65°, 70°, 75°, and 80°

C. Both fungi were killed in all hot water treatments, and neither was killed by a cold water dip.

Two types of rigid and semi-rigid plastic pots were immersed in water at 70° C. (158° F.) for 3 minutes and longer with no distortion of the containers. However, 80° C. water did cause distortion of the more rigid pots.

## CONCLUSIONS

Hot water treatment (70° C. for 3 minutes) of plastic containers is an effective way to eliminate some of the more common soil-inhabiting plant pathogens. Before treatment, containers should be reasonably clean—free of clods and organic matter that might not reach the treatment temperatures.

Since there are many kinds of plastic containers, it would be advisable to test a few in hot water to be certain that objectionable changes in the plastic do not occur.

## LITERATURE CITED

1. Bega, Robert V., and Richard S. Smith. 1962. "Time-temperature relationships in thermal inactivation of sclerotia of *Macrophomina phaseoli*" *Phytopathology* 52: 632-635.
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3. Phillips, D. J., and A. H. McCain. 1972. "Geranium rust control with hot water therapy." *Calif. Plant Pathol.* 11:3-5.

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