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The Myth of Drainage Material in Container Plantings:

"Add a layer of gravel or other coarse material in the bottom of containers to improve drainage"

The Myth

This is just one of those myths that refuses to die, regardless of solid scientific evidence to the contrary! Nearly every book or web site on container gardening recommends placing coarse material at the bottom of containers for drainage. The materials most often recommended for this practice are sand, gravel, pebbles, and pot shards. Other 'benefits' often mentioned include preventing creatures from entering through the drain holes, and stabilizing the container.

Some of these recommendations are quite specific and scientific sounding. Consider this advice from a 1960's book on container plants: "Adequate drainage is secured by covering the hole in the bottom of the pot with a piece of broken flowerpot, concave side down; this in turn is covered with a layer (1/2" to 1" deep) of flowerpot chips. On top of this, a 1/4" to 3/8" layer of coarse organic material, such as flaky leaf mold, is placed." The advice seems to make perfect sense, and it's presented so precisely. After all, we know that plants need good drainage so their roots receive adequate oxygen, and we also know that water passes through coarsely textured material faster than it does fine material. So what's not to like?

The Reality

Nearly 100 years ago, soil scientists demonstrated that water does not move easily from layers of finer textured materials to layers of more coarse textured. Since then, similar studies have produced the same results. Additionally, one study found that more moisture was retained in the soil underlain by gravel than that underlain by sand. Therefore, the coarser the underlying material, the more difficult it is for water to move across the interface. Imagine what happens in a container lined with pot shards!

Some of my previous columns have mentioned soil interfaces and their inhibition of water movement. We can see the same phenomenon occurring here: gravitational water will not move from a finely soil texture into a coarser material until the finer soil is saturated. Since the stated goal for using coarse material in the bottoms of containers is to "keep soil from getting water logged," it is ironic that adding this material will induce the very state it is intended to prevent.

The Bottom Line:

- Planting containers must have drainage holes for root aeration.
- "Drainage material" added to containers will only hinder water movement.
- Use good topsoil throughout in perennial container plantings for optimal water conditions and soil structure.

For more information, please visit Dr. Chalker-Scott's web page at <http://www.theinformedgardener.com>.