Container soils need variety

Americans by the millions grow plants in containers these days. Yet many do not realize that excellent garden soil rarely makes good container soil.

Why are container soils different?

John A. Wott, Purdue University extension environment horticulturist, explains it this way:

"Soil is a semi-rigid mass composed of fine particles and permeated by a network of interconnected pores or passageways in which water, mineral nutrients, and air move and are retained. Soil acts as a reservoir, storing water and mineral nutrients essential to plant growth and survival."

The mass of soil in a container is distinguished from regular ground bed soils by two important characteristics, he adds. Container soil masses are small, and they are shallow.

The effect of smallness is obvious. The water and mineral reservoir available to container plants is much less than to those growing in ground beds. This reservoir, therefore must be frequently replenished by irrigation and fertilization to maintain equivalent growth in containers.

The effect of container shallowness is less obvious, says Wott. For instance, a sponge, like the soil, is permeated by pores which become full when the sponge is saturated with water. If the sponge is placed flat on a level and filled, water will drip from its bottom side. If, after water ceases to drip from the sponge, it is stood on edge, more water will drip from it. Likewise, after water ceases dripping from it in this position, you turn the sponge on end, more water will drip from it. Both the water content and depth of the sponge change from side to edge to end.

In other words, the deeper the sponge the lesser its water content, points out Wott. This same principle holds true for container soils, he says. The more shallow the container, the wetter its soil following irrigation.

"Actually a 'perched' water table forms at the container bottom even though it has a drainage hole. And like any water table, the deeper it is, the drier the soil above it. Because of this effect of shallowness, an excellent garden soil placed into a container will probably be too wet for good plant growth.

While smallness and shallowness create a dilemma for the soil in a container (inadequate supply of water and minerals), this same soil may be too wet for a plant to absorb even this inadequate supply.

"Smallness can be remedied by frequent irrigation and fertilization," says Wott, "but shallowness must be corrected by the addition of coarse-textured materials, such as sand, sawdust, peat, perlite, bark, vermiculite, etc., to the soil. These create large pores which drain following irrigation." □