



## Improving Landscape Soils: *Crucial to Long Term Success...*

Given the time, effort and money required for most landscape projects, it's important to get off to the best start possible. That begins with proper soil improvement. This certainly isn't the most exciting or glamorous aspect of a landscape project - but it may be the most crucial for ensuring long-term success.



Proper soil preparation begins with an assessment of the current physical and chemical characteristics of the soil(s) you'll be working with. More often than not - gardeners usually think about the chemical aspects first like fertilizers, root stimulators, soil additives and alike. Sure, these are important - but it's the physical properties of a soil that can make or break a landscape planting. For optimum growth, plant roots need a good balance of air and water. These characteristics are determined by the soils aeration, drainage and water holding properties.

### **Why is this important?**

Landscape soils that hold too much water typically result in landscape plants having root health problems. A significant lack of oxygen in the soil can also result in root disease, nutrient deficiencies, deterioration of root systems, and ultimately plant death.

Landscape soils that do not hold adequate amounts of water require frequent irrigation, are subject plants to drought stress and possibly damage from salt buildup.

### **Conducting a "Hole-Test"**

One of the best ways to determine a soils aeration, drainage and water holding capacity is to conduct a "hole-test." Here are the basic steps:

Using a post-hole digger or sharp shooter shovel, dig a hole 6" – 8" in diameter and 2' deep.

Fill the hole approximately ½ full with water. Note the time.

Determine how long it takes for the water to drain from the hole.

Earth-Kind uses research-proven techniques to provide maximum gardening and landscape enjoyment while preserving and protecting our environment.

The objective of Earth-Kind is to combine the best of organic and traditional gardening and landscaping principles to create a new horticultural system based on real-world effectiveness and environmental responsibility.

The principal goals of Earth-Kind include:

- Water conservation
- The safe use and handling of fertilizers & pesticides
- Reduction of yard wastes entering urban landfills
- Landscaping for Energy Conservation

As your interest and knowledge in these areas grows you will have an increased awareness of the many programs, practices and activities that are Earth-Kind. Working together we can make a difference in conserving and protecting our valuable natural resources.



*For more information  
see our Web site:*

**EarthKind.tamu.edu**



Use the following guidelines to interpret results from the hole-test:

< 15 min = Excessive drainage. Consider adding organic matter to increase the soil's water holding capacity.

15 – 30 min = Adequate drainage and water holding properties. Modifications not required for planting trees, but adding organic matter will still benefit most landscape planting for flowers and shrubs.

30 min = Poor drainage. Consider raised beds or incorporating coarse textured soil amendments (compost, bark mulch, expanded shale) to increase aeration and drainage.

Here are some additional thoughts and reminders regarding landscape soil improvement.

Be sure to use organic matter that is thoroughly decomposed (compost, bark mulch). Raw wood materials (shavings, chipper material) require nitrogen (N) to break down and often out-complete plants for available N in the soil. This can result in weak, stunted growth. If raw materials are use, additions of N fertilizer will reduce the negative impact on plants.

The best organic matter for use in landscape soils has a good distribution of coarse and fine particles, ranging from pea-diameter to pencil-sized pieces. The finer the organic matter, the greater the water holding characteristics.

In some situations it will be more beneficial to construct a raised bed to achieve the optimum physical characteristics for plant growth. See our Fact Sheet on "Raised Bed Construction" for more details.

Soil improvement can be the most time consuming and costly part of a landscape project. When you're done, few people will appreciate the effort spent on this part of the project. HOWEVER – the results are typically worth the investment in terms of overall landscape performance, water conservation, and long-term success.



*See the Earth Kind Web site for more ways to preserve and protect the environment...*

**<http://EarthKind.tamu.edu>**