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### The Myth of Soil Amendments:

*"When transplanting trees or shrubs into landscapes, amend the backfill soil with organic matter."*

Of all the fictions that abound in popular horticultural, none is as deceptive as this one. It stems from the old adage to "dig a five dollar hole for a fifty cent plant." Adding organic matter to a planting hole appears to be a promising step towards achieving that five dollar hole. It seems logical that steer manure, peat moss, compost, etc. would improve poor soils by increasing aeration, nutritional value, and water holding capacity. And it does - in the immediate vicinity of the planting hole. Eventually, amended planting holes will have negative consequences to plant health. To understand why, it's necessary to examine plant physiology and soil water relations.

Let's say you have incorporated the recommended 25-50% organic matter to your backfill. (Remember that an ideal soil contains 5% organic matter by volume.) The *initial* results are positive; roots grow vigorously in this ideal environment as long as irrigation is provided. But what happens when these roots encounter the interface between the planting hole and the native soil? Native soil contains fewer available nutrients, is more finely textured and is less aerated. Roots react much in the same way as they do in containers: they circle the edge of the interface and grow back into that more hospitable environment of the planting hole. The roots do not establish in the native soil, eventually resulting in reduced growth rates and hazard status as crown growth exceeds root ball diameter.

Soil water movement is problematic as well. Amended backfill has markedly different characteristics than surrounding native soil; it is more porous and water will wick away to the finer-textured native soil. In the summer, moisture within the planting hole will be depleted by the plant but not replaced by water held more tightly in the native soil. This results in water stress to the plant unless the planting hole is kept irrigated, a costly and often unrealistic practice. During wet seasons water will move quickly through the amended soil only to be held back by the more slowly draining native soil. The resulting bathtub effect, wherein water accumulates in the planting hole, floods the roots and eventually kills the plant.

Finally, all organic material eventually decomposes. If you've incorporated one quarter or one half organic matter by volume, within a few years you will have a sunken garden in your landscape. This only exacerbates the flooding problem during wet conditions.

No scientific studies to date show any measurable benefit of soil amendment except in containerized plant production. Plants grown in native soil consistently showed better root establishment and more vigorous growth. Only one study reported no negative effects of amending soil with organic matter - but there were no benefits, either. When you consider the cost of materials and labor needed to incorporate soil amendments, it's difficult to justify the practice.

This outdated practice is still required in the specifications of architects, landscapers, and other groups associated with landscape installation. It is still recommended by garden centers and gardening articles. And there is a multi-million dollar soil amendment industry that has little interest in debunking this myth. As responsible green industry professionals, we need to recognize and avoid non-sustainable management practices.

#### **Bottom line:**

- Select *suitable* plant species for site conditions
- Don't be an "enabler": use native soils for backfill *without* amendment
- In extreme cases, replace the *entire* planting site with topsoil
- **Mulch** landscapes well with wood chips or another water-holding material

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