

## Do I Need Mycorrhizae?



Soils in natural settings are full of beneficial soil organisms including mycorrhizal fungi. Research indicates, however, many common practices can degrade the mycorrhizal-forming potential of soil. Tillage, fertilization, removal of topsoil, erosion, site preparation, road and home construction, fumigation, invasion of non native plants, and leaving soils bare are some of the activities that can reduce or eliminate these beneficial soil fungi. In many man-made landscapes we have reduced or eliminated the soil organisms necessary for plants to function without high levels of maintenance.

Artificial landscapes affect the mycorrhizal relationship in two fundamental ways:

- 1) Artificial landscapes isolate the plant from beneficial mycorrhizal fungi available in natural settings
- 2) Artificial landscapes increase plant stress and the need for water, nutrients, and soil structure mediated by their below-ground "partners". Many nursery and *agricultural soils lack mycorrhizae due to excessive and long-term uses of chemical fertilizers and pesticides.*

What are the benefits?

- 1) Improves soil structure
- 2) Improves humic compounds and organic glues that bind soils into aggregates and improves soil porosity. This improves aeration, water movement into soil, root growth, which is important in sandy or compacted soils.
- 3) Plants receive minerals, nutrients, water and a variety of other growth promoting substances.
- 4) Fungus receives essential sugars and compounds to fuel its own growth.
- 5) Fungal threads fan out into the soil and expand the amount of soil which the roots may explore for raw materials
- 6) Disease and pathogen suppression. Mycorrhizal fungi attack pathogens or disease organisms entering the root zone.



These tiny filaments (mycorrhizal fungi) actually attach and penetrate between and within the outer cells of the root cortex of plants and effectively become extensions of the root system itself. This is of a pine tree root.



Figure 1: Tree on right treated with mycorrhizal



Figure 2: Root on left is treated with mycorrhizal



Figure 3: Maple tree on left treated with mycorrhizal