



Understanding Mycorrhizae

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“Nursery and landscape professionals today are faced with a bewildering array of conditions and treatments. Propagate, aerate, irrigate, fertilize, mulch and transplant are but a sampling of the activities utilized by today's practicing industry professionals”(Amaranthus). Since the dawn of time plant species around the world have survived without the help of man-made environments and intensive cultural practices. These early descendents of species known today were faced with times of drought, disease pressures, depleted soils and extreme environmental conditions. Over time these species created an adaptation in order to fend off these conditions and survive. The mycorrhizael relationship is an example of this adaptation, allowing plants to trap mineral nutrients and water essential to support plant growth needs.

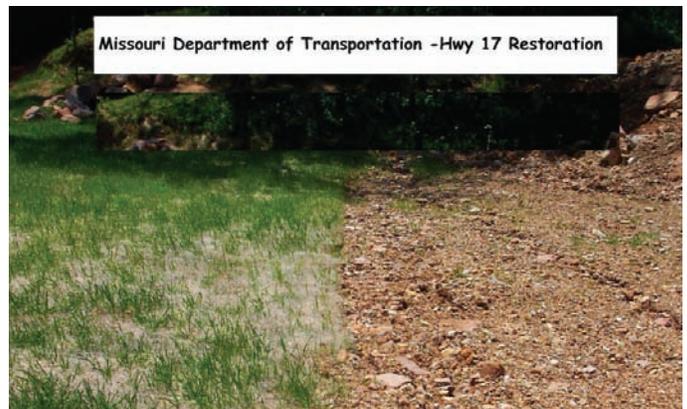
Mycorrhizae:

Mycorrhizae is best known as a symbiotic relationship between the naturally occurring fungi in the soil and a host's plants root system. Mycorrhizae fungi

can be found in about 99% of all living plants and makes up one of the most important elements in a healthy, complex soil food web. The fungi and host form a mutualistic relationship with each other in which both benefit simultaneously. The mycorrhizae colonizes in the roots cortex forming an extension of the root system and a fibrous network. This network captures and assimilates nutrients and water allowing soils to be more productive during stress periods. The plant's interaction with the fungi allows the plant to provide energy to fungi while the fungi allow the plant to take up phosphorus and other micronutrients more efficiently.

Benefits:

- Plants receive minerals, nutrients, H2O, and other growth promoting substances.
- Fungal threads formed by mycorrhizae encourage roots to penetrate deeper in the soil in search for raw materials.
- The fungi release powerful chemicals into the soil that dissolve hard to capture elements such as phosphorus and iron.
- Other chemicals produced by fungi include important enzymes that effectively break up organic carbon and nitrogen sources.
- A root/hyphae web is formed in the soil that



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captures and assimilates nutrients and water allowing added help during periods of drought and stress.

- Mycorrhizae excrete specific antibiotics which can immobilize and kill disease organisms entering the root zone. This allows for a more disease/pathogen resistant environment for the plant.

Forms of Mycorrhizae:

Mycorrhizae can be fully described in the two ways it initiates the relationship with its hosts plant. Arbuscular mycorrhizal fungi (intercellular) also known as AM fungi benefit the plant by penetrating or entering the cortical cells of the plant resulting in the increased efficiency of water/nutrient uptake. Ectomycorrhizal fungi (extracellular) also known as EM fungi do not penetrate the root cortex but rather intertwine around and within the root forming the root mass. There are many forms in which mycorrhizae can be introduced into your fertility program:

- Powdered seed coating- Enhances growth and seed resistance during vulnerable early stages of development.
- Soluber M.F.- Promotes root growth at higher concentrations and is mainly used with rooting media and potting soils.
- Gel form M.F.- Used to limit transplant shock and to help recover from drought periods reducing watering.

Incorporate mycorrhizae today:

Research has proven the incorporation of these mycorrhizae fungi into your fertility program to be extremely beneficial. It will reduce the use of fertilizer, add drought tolerance and help fend off detrimental diseases. With the many obstacles we are all faced with today the addition of mycorrhizae can help diminish the rising stress of ascertical perfection.

Seed treatments of mycorrhizae are available. Please contact your Stover representative or our office for recommendations and costs.



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