



## *Putting Trees on Cruise Control? Activate Mycorrhizae*

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When you got in the car today, what did you do? You cranked it up and pressed the pedal down to get up to speed. But once you get going, it's easy to keep the car at the speed limit (you were going the speed limit, right?). Just a little constant pressure on the pedal – a little constant infusion of energy – is all it takes.

But if you have a big obstacle in your way (like tough terrain or a hill), the car takes more energy to maintain speed. If you let the car slow down, it requires extra energy to get back to that constant speed.

Trees may not take you places, but their energy consumption is not dissimilar to the vehicle that brings you to them. A tree needs an extra surge of power at the start of its journey, but once it's maintaining a steady growth rate, all you need to do is provide a little steady care.

### **On the Road to Growth**

Trees require a healthy environment to grow and thrive, including soil, sunlight for energy, water, low amounts of stress, and freedom from pests and disease.

It's when the environment is lacking or unhealthy that a tree requires supplemental assistance from a professional. Some environments – especially those affected by humans, such as new building sites – are severely lacking in the elements required to support a tree. Construction, tillage, compaction, erosion,

pesticides and even over-fertilization can negatively impact the soil and harm the supportive fungi on which trees depend.

Unlike the clear picture provided by the speedometer on your car, many times the physical indicators of problems in a tree don't manifest themselves until it's too late, sometimes years later. Lack of color and wilting may be initial signs, while stunted growth indicates more long-term deficiencies.

(The maples on the left have been treated annually by injecting mycorrhizal inoculum. The



maples on the right have never been treated. Washington State rest area 2006)

## Refuel, Inspect and Tune-up

When neglected, cars rust and seize up. Trees die.

Your vehicle is lucky – you know that letting it run totally empty of fuel will cause major problems, so you refill the tank regularly. You keep fluid levels up for the same reasons. And most importantly, you perform these checks routinely.

Trees may not have a mileage indicator with numbers, but any professional knows that the rings inside the trunk tell the tale of a plant's life. Just like a car, continually providing a tree with the materials it needs to thrive is necessary for its survival, not just an extra boost. Waiting until stress is impacting a tree makes the recovery journey exponentially more difficult than maintaining a healthy tree.

Most professionals are familiar with adding additional water, fertilizer or disease treatment. Of course, these supplements should be applied at proper levels – excessive fertilizer can actually kill beneficial microorganisms in the soil, creating additional problems. It is actually the soil that is most often neglected, thereby becoming the “root” of many problems.

## The Mycorrhizal Superhighway

Mycorrhizal fungi are beneficial microorganisms found naturally in healthy soil and roots. These fungi form symbiotic and mutually beneficial relationships with plants (usually with the roots). After the mycorrhizae colonize and begin to multiply, they spur the roots to expand, which then prompts the mycorrhizae to reproduce again in order to colonize the roots. Trees, in turn, provide carbohydrates that the mycorrhizae need to thrive.

Mycorrhizal fungi help increase establishment and growth, extend the roots' surface area and boost resistance against stress. Research shows that plants receiving a mycorrhizae supplement can experience an 18-fold increase in total root surface. Color, foliage and overall health of the tree also improve.



Mycorrhizal fungi improve plant health and performance by boosting nutrient and moisture uptake as well as increasing tolerance to a wide variety of environmental extremes such as drought, salty irrigation water or soils, and waterlogged, compacted or anaerobic soils. Damaged or disturbed soil often exhibits reduced populations of mycorrhizae, leaving recently transplanted trees at a disadvantage during the critical establishment period.

“Mycorrhizal fungi are sort of akin to vitamins for people,” says research associate Kristi Woods. “A consistent,

(Fungal hyphae radiate from the root surface increasing tree access to valuable soil resources)

ongoing biological feeding approach maintains a tree using more of its natural support systems. A healthy tree with adequate nutrition will be able to better overcome the stresses it encounters, allowing it to withstand drought and resist against disease or pests.”

### **Turning on the Cruise**

Vitamins work best if taken daily, and a tree functions best if it receives consistent, regular exposure to its “vitamins.” Mycorrhizal inoculum can be administered to a plant in several forms, including liquid injection, granular application and spikes.

Those application methods are more flexible and reliable than the application of traditional fertilizer, which can be time and labor intensive, can wash away or be incorrectly applied, or even cause more harm than good if applied at the wrong time.

“Mycorrhizal- filaments release elements over time directly to the root zone, the target for nourishment, allowing that constant attention a tree needs to thrive in a year-round, complete nutrition solution. You don’t have to schedule a lot of visits to apply more mycorrhizae – you just have to mark your install day on the calendar.”

While several factors influence the health of a tree, balanced and constant management is the overall key to success. Avoid detours from your nourishment routine and your trees will power down the long road of life with success.