



MUSHROOMS: The Secret Plant Food, Insect Control & Bioremediator

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My introduction to using mushrooms in the landscape came from the landscaper that planted the trees and shrubs when we moved into the house. He swore that, with his secret weapon, we would not lose the plants he planted as long as we provided supplemental water the first year.

Eventually, he let me in on his “secret”; it was mycorrhizal fungi. The trees and shrubs were planted in November of 2007 (right before the dry years of 2008 and 2009). And, he was correct; we did not lose a single tree or shrub he planted. Since then, I have spoken with an arborist who also swears by mycorrhizal fungi. I am thinking there must be something to this and thought I would check it out.

Along with bacteria, fungi are the primary recyclers and digesters of life. A mushroom is the fruiting body of a much more extensive organism (the mycelium) growing in the ground. Overlapping mycelia mats actually permeate all the landmasses on the planet in the first two to four inches of soil, and remain in ground for many years. Mycelia are everywhere and grow very quickly. They create habitats in which vegetables and other plants can grow. Saprophytic fungi (those that promote decay) can repair the damage caused to ecosystems. These fungi actually build soil so the landscape can become a pedestal for greater ecological diversity.

Mycorrhizal fungi such as chanterelles, matsutake, and porcini (which are symbiotic), grow in association with the root zones of higher plants. With very few exceptions, virtually all deciduous trees and shrubs have mycorrhizal mushroom hosts that sheathe their roots, increase their capacity to absorb water, extend their root zones and protect them from disease vectors. Mycorrhizal fungi are what the landscaper placed in the soil when planting the trees and shrubs.

Mushrooms in your garden are a sign of a healthy ecosystem. The mycelium produces enzymes, acids, and compounds with antibiotic properties that break down large organic complexes of molecules into simpler forms those plants can absorb. This characteristic is also what makes them so useful in ecological restoration where there is a need to break down wastes and toxics.

The state of Washington sponsored a pilot project with bio-remediation companies to test the effectiveness of using various fungal technologies to decontaminate soil which was saturated in diesel fuel after an oil spill near Bellingham, Washington. Paul Stamets, a mycologist, along with other bio-remediation companies, participated in the project. The other companies used standard bacterial and enzymatic processes to try to decontaminate the the soil, which had been mounded up in piles about three feet high and 40 feet long and six to eight feet wide. Each company was given a soil model to work on.

The Stamets’ group inoculated their pile with the mycelium of oyster mushrooms. All the piles were covered with a tarp after their respective treatments. Approximately six weeks later, the tarps were lifted from the piles. There was a strong smell of oil as the tarps were lifted from the other companies’ piles. They were devoid of life. The pile treated with the oyster mycelium was literally covered with oyster mushrooms, some as big as 12 inches in diameter. Lab tests found no toxic oil residue in either the soil or the mushrooms.

Stamets says this finding is significant because hydrocarbons are the basis for many other toxic industrial products, including pesticides and herbicides. The benefit does not stop with removing the toxins from the soil. After the mushrooms matured, flies came in and laid eggs in them. Maggots appeared, birds flew in and other small mammals began to eat the mushrooms and the maggots. The birds and animal carried in seeds, and plants started growing. The mushroom initiated a process that led to rapid habitat recovery. The polluted pile of dirt was transformed into an ecosphere of life. Again, we see what nature can do, with a little help from us.

As a note: Oyster mushrooms are one of the prime candidates for breaking down petroleum based and hydrocarbon based contaminants and pesticides. They are the easiest to grow and they will grow on almost anything – old chairs, soggy money, or coffee grounds. They are also delicious and contain lovastatin, a cholesterol lowering agent.



Oyster mushrooms used for bio-remediation