

A Review of *Mycelium Running: How Mushrooms Can Help Save the World* by Paul Stamets
Reviewed by Terry Shistar

I have been raving about *Mycelium Running* to everyone I see these days. Perhaps the claim that we can help “save the world” by growing mushrooms will seem overstated to some people, but Stamets makes a convincing case.

There are many ways in which *Mycelium Running* intersects with my interests. Above all, when Stamets completes our vision of the world by helping us understand the role of fungi, even a scientist trained in a reductionist tradition can understand that the soil is a living organism whose life is intertwined with the life of the plants and animals that live in it and on it. Fungi are essential to the ecosystem. Of course, we’re all familiar with the function of fungi as decomposers (though often not realizing how important decomposers are in digesting “waste” and turning it into food.) But fungi also play other roles. They feed plants and animals directly. They form a communication system. They detoxify toxic chemicals.

Let’s go back to digesting “waste” and turning it into food. The “decomposer” role in ecosystems is one that fungi share with some insects, bacteria, earthworms, and other organisms, which digest fecal matter and dead cells, providing nutrients to plants. But wait a minute, aren’t those plants and animals that I eat dead, too? Don’t I consume, on occasion, the fecal matter of certain yeasts (in the form of beer or wine)? Maybe “decomposers” aren’t such a distinct group of folks doing the dirty work on the planet. Maybe that’s just an artificial way of dividing up the world.

What I have found most fascinating is learning more about this part of life in the soil. Organic gardeners and farmers once talked about “feeding the soil” instead of “allowable inputs.” Mycorrhizal mushrooms form symbiotic (mutually beneficial) relationships with plants. Stamet reports on research on the symbioses showing that three distinct tree species (Douglas fir, paper birch, and western red cedar) shared sugars through mycorrhiza growing in the soil, with trees in the sun giving up nutrients to those in the shade.

Stamets has furthered this research in an applied field. Having heard of traditional interplanting of garden giants (*Stropharia rugoso annulata*) in Eastern Europe, he has begun to do field tests to examine the symbioses between mushrooms and vegetables. He found that when broccoli and brussels sprouts were mulched with sawdust inoculated with elm oyster mushroom spawn, the yields were 4 to 6 times that of beds without the mushrooms. And there were choice edible mushrooms, too! In addition to the benefits of fungi that produce edible mushrooms, inoculation of seeds with mycorrhizal fungi helps plants gather nutrients and prevent parasitization.

I mentioned that the book intersected many of my interests. I’m interested in wild foods, and this book has encouraged me to hook up with local mushroom hunters to add to my currently small list of wild mushrooms I feel comfortable eating – morels and puffballs. Because it’s winter and the opportunities to learn mushrooms here in Kansas are largely limited to shelflike fungi growing on trees, *Mycelium Running* has encouraged me to learn some medicinal mushrooms that I’ll add to my herbal medicine chest – reishi (*Ganoderma lucidum*) and turkey tail (*Trametes versicolor*) are particularly useful, not difficult to identify, and fairly

common here. I am interested in restoring native plants, and Stamets's chapter on mycorestoration (as well as the rest of the book) is useful in promoting positive interactions among plants and fungi. I suspect that encouraging certain fungi will help some plants that I've had trouble with.

There are a few places where *Mycelium Running* is directly relevant to efforts to prevent and eliminate the spread of toxic chemicals. Stamets and others have been working with fungi that feed on insects, and he has figured out a way to grow fungi that delay their spore formation and actually attract the insect to the fungus, thus breaking through an obstacle in using fungi to protect homes from carpenter ants and termites. However, in doing so, Stamets says his philosophy "is not to wage war against the insect kingdom but to enlist fungal allies for the intelligent, natural, and localized control of targeted insects We seek balance, not extinction."

Stamets also talks about the use of fungi to detoxify toxic chemicals, and his list of chemicals digestible by fungi includes dioxins, organophosphates, PCBs, and many wood preservative chemicals, including pentachlorophenol. He also tells how filters of mushroom spawn can remove pathogens, nutrients, and toxins from runoff.

Finally, I want to make it clear that *Mycelium Running: How Mushrooms Can Help Save the World* places a big emphasis on the "how". One reason that the book is so exciting is that it has given me the information I need to *do* things I've mentioned above. I can use medicinal mushrooms. I'm looking forward to the garden giant and elm oysters fruiting in my garden. I'll add some mycorrhizal spores to my potting soils when I start my broccoli plants this spring. I've learned how to propagate mushrooms from spores and stem butts and move them into the woods, where I hope some of them will stop the spread of other fungi that have been killing oak trees.

Maybe you can see why I've been raving.