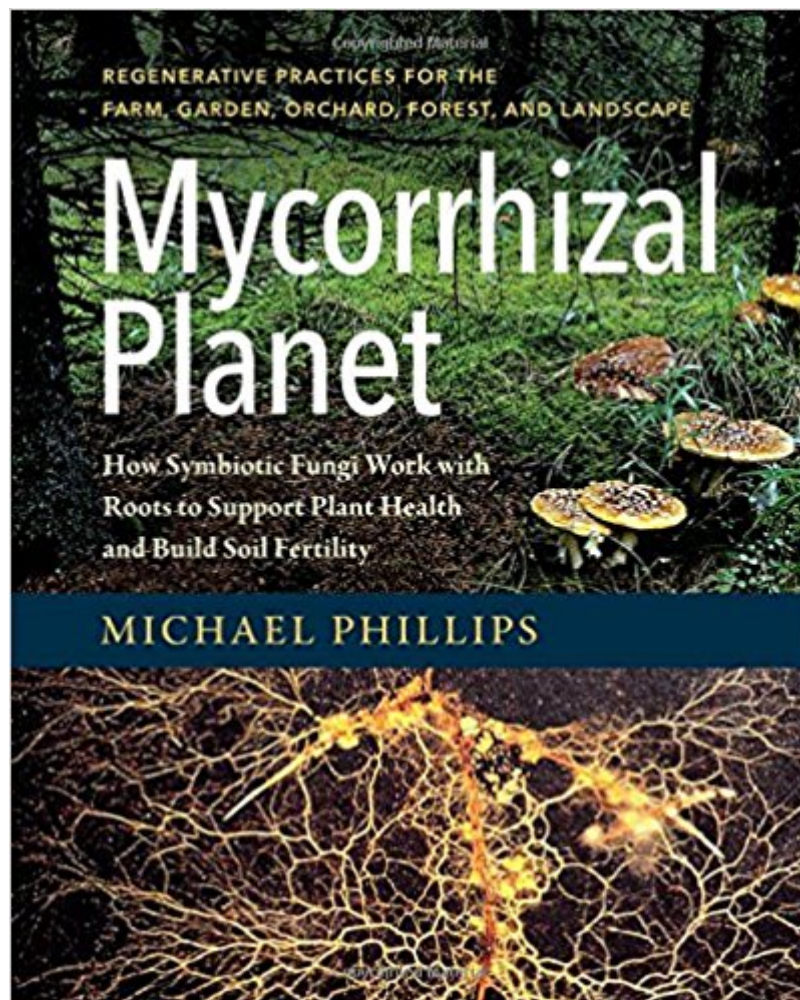




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# Mycorrhizal Planet: How Symbiotic Fungi Work With Roots To Support Plant Health And Build Soil Fertility



## Synopsis

Regenerative practices for the farm, garden, orchard, forest, and landscape Mycorrhizal fungi have been waiting a long time for people to recognize just how important they are to the making of dynamic soils. These microscopic organisms partner with the root systems of approximately 95 percent of the plants on Earth, and they sequester carbon in much more meaningful ways than human carbon offsets will ever achieve. Pick up a handful of old-growth forest soil and you are holding 26 miles of threadlike fungal mycelia, if it could be stretched it out in a straight line. Most of these soil fungi are mycorrhizal, supporting plant health in elegant and sophisticated ways. The boost to green immune function in plants and community-wide networking turns out to be the true basis of ecosystem resiliency. A profound intelligence exists in the underground nutrient exchange between fungi and plant roots, which in turn determines the nutrient density of the foods we grow and eat. Exploring the science of symbiotic fungi in layman's terms, holistic farmer Michael Phillips (author of *The Holistic Orchard* and *The Apple Grower*) sets the stage for practical applications across the landscape. The real impetus behind no-till farming, gardening with mulches, cover cropping, digging with broadforks, shallow cultivation, forest-edge orcharding, and everything related to permaculture is to help the plants and fungi to prosper . . . which means we prosper as well. Building soil structure and fertility that lasts for ages results only once we comprehend the nondisturbance principle. As the author says, "What a grower understands, a grower will do." *Mycorrhizal Planet* abounds with insights into "fungal consciousness" and offers practical, regenerative techniques that are pertinent to gardeners, landscapers, orchardists, foresters, and farmers. Michael's fungal acumen will resonate with everyone who is fascinated with the unseen workings of nature and concerned about maintaining and restoring the health of our soils, our climate, and the quality of life on Earth for generations to come.

## Book Information

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## Customer Reviews

Publishers Weekly- "Phillips, the inimitable author of *The Apple Grower* (2005) and *The Holistic Orchard* (2011), once again charms and instructs with an in-depth philosophical and practical exploration of fungi. Branching off from Paul Stamets's *Mycelium Running*, Phillips focuses on fungi's intimate relations with the plant community, revealing their essential roles in botanical and soil health and how we can nurture them for our benefit and that of the entire biosphere. The book includes extensive and specific information about the science of fungi and their symbiosis with plants; nurturing and propagating fungal networks and functions; minimizing soil disturbance in gardens, forests, farms, and orchards to build soil, capture carbon, and assist mycelial integrity and relationships; and gathering and growing edible mushrooms. In refreshing contrast to the pared-down utilitarianism of many books in the genre, Phillips's poetic, conversational, rambling, humorous writing encourages readers to settle in for a thoughtful read. Organic, biodynamic, and permaculture practitioners will value this book, but Phillips writes for a general readership too.

• "Mycorrhizal Planet isn't just a book about wild-running fungi. It covers in great detail all the benefits, scientific research, and technical information known about mycorrhizae. It also outlines methods of how to manage soils with the use of organic fertilizers, crops grown, and proper tillage to get the biology to flourish—including mycorrhizae. Because if a grower knows why, he or she will teach themselves how."

—Gary Zimmer, founder, Midwestern BioAg; author of *The Biological Farmer*

• "The world desperately needs the information in *Mycorrhizal Planet*! I am so glad Michael Phillips wrote this book. His approach is creative, inspired, and down-to-earth. A worthy effort with many useful practices laid out for all."

—Dave Jacke, coauthor of *Edible Forest Gardens*

• "I firmly believe that the next big advancement in organic farming is learning how to harness the power of soil ecology by replacing mechanical tillage with biological tillage. *Mycorrhizal Planet* is an awesome book because it not only describes the importance of respecting living soil dynamics, it teaches how to act upon it. The chapter on practical nondisturbance techniques is especially enlightening to any serious market gardener."

—Jean-Martin Fortier, author of *The Market Gardener*

• "How lucky are we to be alive and growing plants right now? The humbling interconnectedness and relationships realized through *Mycorrhizal Planet* will fill you with wonder

and have you questioning your role in the garden, orchard, or farm. This is the manual for upping your growing game!â•–Eliza Greenman, restoration orchardist and fruit explorer

Michael Phillips is an emissary from the fungal realm, and heâ™s here to tell us, through both study and practice, how our partnership with fungi is not only crucial but how it can be carried out practically on our homesteads and farms.â•–Ben Falk, author of *The Resilient Farm and Homestead*

*Mycorrhizal Planet* offers fascinating science and practical ideas for gardeners, farmers, forestersâ•–for everyone, in fact. Learning how we can work with beneficial soil fungi is deeply relevant, not only to support optimal plant health and nutrition but as part of a lasting climate change solution.â•–Eric Toensmeier, author of *The Carbon Farming Solution*

In *Mycorrhizal Planet*, Michael Phillips takes us on a journey into the realm of cutting-edge soil science, while always maintaining a playful sense of passion, excitement, and levity. As deep as Phillips goes into sharing his immense knowledge of the mechanics of vibrant living soils and their role in plant health, he never loses sight of the bigger pictureâ•–that of regenerating the planetary ecosystem. To that end, he offers robust practical applications for agricultural enterprises of all sizes. The beauty of this timely and important book is that we now know not only how but why we must embrace and cooperate with the innate intelligence of the biological world as we develop the agroecosystems that will sustain us in the future.â•–Scott Vlaun, executive director, Center for an Ecology-Based Economy

Most land plants depend on symbiotic fungi in their rootsâ•–mycorrhizasâ•–to help them to grow. Some, like orchids and many pines, depend on them absolutely. In fact, with no mycorrhizas: no land plants to speak of, and hence no land animals, including human beings. Like dung beetles and flies and microbes in general, root fungi are the largely unsung heroes of nature, cryptic creatures that make the world work. Michael Phillipsâ™s *Mycorrhizal Planet* brings them centre-stageâ•–where, despite their modest demeanour, they deserve to be.â•–Colin Tudge, founder, The College for Real Farming and Food Culture

*Mycorrhizal Planet* is a thoroughly researched treatise on the impact of root fungi on the functioning of our biosphere. It is written in Michael Phillipsâ™s usual unique, enjoyable, and easily readable style. It is a must-read for all individuals seriously interested in the quality of human life and future of our planet.â•–George W. Bird, professor, Michigan State University

*Mycorrhizal Planet* awakens the reader to the interconnected, interdependent network of souls working on behalf of the earth right under our feet. The mycorrhizal fungi are our allies in promoting health for forests, orchards, and fields. Michael Phillipsâ™s comprehensive scientific knowledge, along with an abundance of practical information for the grower, and a good dose of positive vibes for the future of our planet, make this new book one to add to your collection.â•–Linda Hoffman, orchardist, Old Frog Pond Farm

Our

knowledge of how habitat restoration and regenerative agriculture work • how they proceed or falter • is being renovated as we speak. A new sense of how symbiotic mycorrhizae shape plant establishment and succession has been slowly emerging over the last quarter century. In his new book, *Mycorrhizal Planet*, Michael Phillips weaves his own web of astounding connections regarding what holds this earth together. Not since Paul Stamets's pioneering inquiry, *Mycelium Running*, have we been blessed by such a synthesis that tells how symbiotic fungi are the true and most trustworthy stewards of this planet. With his usual genius of explaining complex science in ways farmers and restorationists can grasp, Phillips reminds us that those in Washington, DC, have never really "run this country," our fungal allies have. --Gary Paul Nabhan, author of *Growing Food in a Hotter, Drier Land* "Let's make soil great again. Michael Phillips and *Mycorrhizal Planet* have a plan. This book focuses on the tangible things you can do on the land you love to make it healthier and more productive. In forty years doing USDA research and producing mycorrhizal fungi, I have read and reviewed thousands of mycorrhizal articles. Michael Phillips gets it. Finally we have a mycorrhizal book that is entertaining, practical, and vibrant. We truly live on a mycorrhizal planet, and people who read this book will emerge with a profound understanding of how these little creatures shape our earth and our future." --Dr. Mike Amaranthus, founder, Mycorrhizal Applications "Fungi are not just decomposers, they are composers of soil and orchestrators of soil biodiversity. *Mycorrhizal Planet* pays tribute to the small and unseen, the uncredited collaborations beneath our feet, and Michael Phillips leads the tour underground for everyone with a warm and crafted writing style that anyone can understand and put to use. *Mycorrhizal Planet* offers readers a whole new dimension in propagating mycorrhizae, with cover crop considerations and noninvasive soil preparation techniques, and encourages readers to complete the loop by creating more balanced and efficient cultivation systems with the mental tools to harmonize almost any soil and plant condition. Distilled from other complex texts and real world experience, Michael Phillips delivers a gem when the planet needs it the most." --Tradd Cotter, Mushroom Mountain, author of *Organic Mushroom Farming and Mycoremediation*

Michael Phillips is a farmer, writer, carpenter, orchard consultant, and speaker who lives with his wife, Nancy, and daughter, Grace, on Heartsong Farm in northern New Hampshire, where they grow apples and a variety of medicinal herbs. Michael is the author of *The Apple Grower* (Chelsea Green, 2005) and *The Holistic Orchard* (2011), and teamed up with Nancy to write *The Herbalist's Way* (2005). His Lost Nation Orchard is part of the Holistic Orchard Network, and Michael also leads the community orchard movement at [www.GrowOrganicApples.com](http://www.GrowOrganicApples.com)

I will read anything that Michael Phillips writes. Not only is he a leading authority on growing fruit organically, Phillips could find a way to write the listings in the phone book in an entertaining fashion. So it was a no-brainer for me to pre-order his latest book and I was not disappointed. He covers some very complicated science (who knew soil and fungus were so complex?), but makes it accessible to the interested reader. I learned a lot and am re-inspired to continue on the fungal path in my homesteading endeavors. If you own his *The Holistic Orchard*, you will find crossover and even some repeated illustrations and photographs. He goes into greater detail in this book, though, and his research has turned up new twists to the tale. I better understand the reasons for the various components of the holistic sprays he champions and have immediately put some of the suggestions into action, such as adding karanja oil to the mix. It is well worth the addition to your library.

Mycorrhizal fungi-plant relationships have been one of the hottest areas of mycological research for the past couple of decades. When I was an undergrad they were barely known. The state of the art in agriculture back then did not really include fungi (save pathogenic ones) in the formula for success. Science was still riding the post-WWII wave of "better living through chemistry" and all problems in the field or orchard were solved by spraying pesticides or adding more fertilizer. This pretty much held for home gardeners too. Fungi were misunderstood and even scorned by gardeners for a long time. The interaction is so complex that only recently have we begun to get a handle on it. But in the last few years, scientists have come to realize just how important mycorrhizae are to plant health. Mycorrhizae help to bolster the immune systems of your plants, thus impacting everything in their life cycle, including resistance to pests and disease, which increases yield and quality. Indeed, nearly every kind of plant in a garden can benefit from these fungi. What the home gardener needs is a source of accessible, concise information. *Mycorrhizal Planet* by New England-based holistic grower and author Michael Phillips is a really nice book, chock full of great tips, with plenty of images to show you how to deploy all the latest organic techniques and buzzwords like permaculture, mycoremediation, biochar, green manuring, cover-cropping, and over-cropping. The book is a nice large size format, but is a very quick read. Phillips has authored other very popular books and this latest will doubtless do very well. The author's writing style is conversational and almost poetic at times. He makes heavy use of colloquialisms "like pretty much every paragraph" which may not suit everyone's tastes. Phillips's firsthand knowledge of the book's major topics

shines through. He does get mixed up a bit when attempting to explain more scientific matters like microbial taxonomy and physiology. Examples include explaining mycorrhizal lifestyles "mycorrhizal fungi unable to break down organic matter" (it's well known nowadays that many ectomycorrhizal fungi possess the ability to live saprobically); fungi-like Actinomycetes bacteria are only recently known to be bacteria, not fungi, thanks to DNA sequence analysis (they were bacteria in my 1970s era undergrad Biology 101 textbook, and that predates the routine use of DNA as taxonomic tool); etc. My quibbles are small and likely to go unnoticed by most readers, and did not detract from an otherwise really useful book. If you are the kind of person who will be interested in growing or applying the knowledge gleaned from a book about mycorrhizae, and not so much wanting a collection of facts and information on mycorrhizal fungi, then this title is for you. -Britt A. Bunyard (This review was first published in FUNGI, vol 10 no.2, 2017.)

I can't say enough about the wonder that this book inspired - and then the practical, down-to-earth solutions for the garden and farm that it provided. And Michael's not some wild-eyed hippy: the practices he suggests are things you can actually do in your garden today. You don't have to stop tilling or digging. Michael also isn't selling anything: he gives away the recipe for making your own mycorrhizal inoculant. But even without the practical stuff, the wonder is worth the money spent on the book and the time spent reading it.

This is a wonderful book, I have bought 2 and I am sure I will buy more for my granddaughter. I will never be without his book.

Very insightful. You ;have to start from the ground--if base is bad your results are poor.

Good product, at least in the past, grandkids enjoyed them, which is why I purchased them and use them on every stay over when it gets dark outside, they like to have them to play outside.

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