MAGAZINE - SINCE 1937
GROWERTALKS

Cover Story

Everybodyâ€™s Doing Itâ€”Should You?

| *Jennifer Zurko*

>> Published Date: 1/31/2017

It's an important word that's hard to pronounce, but once you see the benefits of adding it to your growing media, it'll be as simple as saying phytophthora.

At least that's what the companies who produce mycorrhizae and the media that include it are hoping. And it seems to be working—they say more and more growers are seeing how it can help their crop go from good to great with a better root system, plant vigor and more.

Mycorrhizae isn't a new thing, by any stretch; it's been naturally occurring in nature since forever. And greenhouse growers knew about it 30 years ago, but at the time, no one had ever thought they would be able to use it in their own growing media. Now, with more research coming out and more companies making it commercially available, mycorrhizae is all the rage.

Is it a soil additive or amendment?

Well, it's neither.

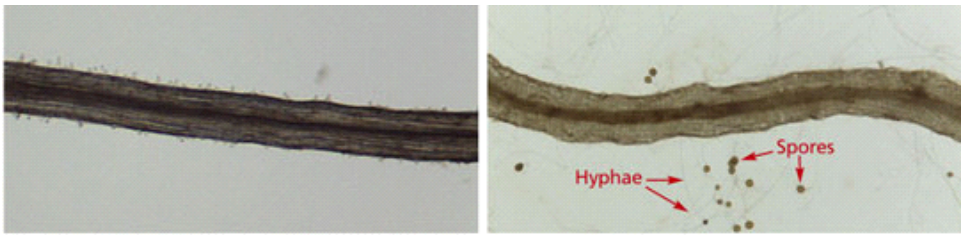
For those of you who don't know what mycorrhizae is, in laymen's terms, it's a fungus that's found naturally in undisturbed soil—the forest mushrooms that grow in damp areas and on tree roots are a form of mycorrhizae. For the last few decades, there have been numerous studies conducted on the benefits of soil organisms like mycorrhizal fungi and how it could be incorporated into growing media for greenhouse plants. (You may have learned about it in one of your hort or agronomy classes in college.) But because greenhouse growers use soilless media with peat, bark or coir, there are limited amounts of beneficial fungus naturally occurring in the media, so it needs to be added.

Hence, we come full circle to our original question.

Pictured: Some mycorrhizae have flat granules after it's harvested and processed (left). Others are round, like marbles or pearls, as seen in this magnified close-up of mycorrhizae spores (right).

Most states categorize mycorrhizae as a "microbial additive," but the term the suppliers like to use is "microbial inoculant." Mycorrhizae does its job by "joining" with the root cells and spreading out, increasing the size of the root system. This in turn provides a much better environment for water and nutrients to be absorbed into the plant through the roots. It's a symbiotic relationship between the roots and the mycorrhizae that makes the plant stronger—a tougher plant means it can more easily fight off any disease or stressor.

"Inoculating plant roots with mycorrhizae is similar to inoculating yourself with beneficial microbes when you eat yogurt and salads after being sick," explained Mark Highland, president of The Organic Mechanics Soil Company, which offers mycorrhizal products for wholesalers and retailers. "Re-populating these essential symbiotic microbes helps organisms get healthy and thrive—no matter if they are a plant or a person."



Pictured: Roots without mycorrhizae (left); roots with mycorrhizae (right).

There are more than 150 different species of mycorrhizae found in soils around the world and each one offers unique benefits. Blair Busenbark, Sales & Marketing Manager for Mycorrhizal Applications, compares mycorrhizal fungi to a person taking a multi-vitamin instead of just taking vitamin C. “Depending upon the day, your body needs different components,” he said, and plants work in a similar way.

Ed Bloodnick, Grower Services Product Development Director for Premier Tech Horticulture, said that his company was the first to supply mycorrhizae to the ornamentals industry in 1991. Their PRO-MIX MYCORRHIZAE includes a species of endomycorrhizae (*Glomus intraradices*) that became a standard ingredient in 2005 and they’ve continued to research on for more than 35 years to introduce additional mycorrhizae products. Premier Tech now offers a PRO-MIX growing media with mycorrhizae along with a biofungicide. Ed says the benefits are hard to deny.

“Mycorrhizae become an extension of the plant root system with small, fine structures called hyphae, forming a mutually beneficial symbiosis with the plant,” Ed said. “This reduces stress and plants put more energy into plant growth. There are also some physical changes in the root, which makes it more difficult for plant pathogens to penetrate the plant root system, so there can be a reduction of plant root diseases.”

“When a grower applies their fertilizer to the soil, only a portion—that’s usually 25% to 30%—of the nutrients are actually absorbed by the plant,” said Blair. “With mycorrhizae, depending upon the situation, it could go up to 75% to 80%.”

Reaping the benefits

If you look at mycorrhizae once it’s harvested and processed, it either looks similar to kitty litter—but with flatter granules—or round like marbles or pearls (see the magnified close-up of mycorrhizae spores). Premier Tech offers their species of mycorrhizae premixed in their PRO-MIX growing media for wholesale and retail, along with a granular form for retail that gardeners can add to their beds and containers. In the last year, the company has introduced a pure mycorrhizal inoculant on a granular zeolite (absorbent mineral) carrier, which growers can add to their own growing media called PRO-MIX PUR MYCORRHIZAE Z.

Mycorrhizal Applications has formulations with 19 different species of mycorrhizae, a couple which you can only get exclusively from them. They offer wholesalers granular formulations that can be mixed with growing media or as a powder formulation to use in a drench or root dip.

And Organic Mechanics incorporates mycorrhizae in their root zone feeder packs, called Fuhgeddaboudit, for retail. Mark said they also offer it in bulk to growers and nurseries.

Since research has shown positive results and growers are starting to see the benefits of mycorrhizae, it’s opened the door for growing media and soil inoculant companies to develop products that include it. Before you couldn’t get it at all; now growers have their choice of supplier.

But why has it taken so long?

“I think it’s an idea whose time has finally come,” stated Mark. “Mycorrhizal products have been around for decades and I think enough scientific research and enough peers are doing it where everyone’s like, ‘Alright, maybe I should look into that.’ And the products have come a long way, too. There are a bunch of companies who produce better, higher-quality mycorrhizal inoculants. I think, really, it has more to do with it’s finally the right time; scientists have been seeing this for years and everything has to trickle down a bit.”

“If you understand that there are a lot of benefits, people need to experience that [for themselves],” said Blair. “That’s why a lot of what we do is get people to trial it and understand how to evaluate it. You have to understand where you can get the value out of it.”

Part of that education process is to show growers how mycorrhizae works for each stage of the production cycle. Blair said that it’s not just for finished containers.

“The other part of mycorrhizae is it helps with transplant success,” he said. “If you treat a plug or cutting with mycorrhizae, the whole life of that plant is positively impacted. If you start there, in about eight weeks, you start seeing the benefits.” So their trials have shown that if you treat it every step of the way, you’ll have success at every stage.

“In the end, everybody wants to grow a beautiful plant that still looks good at retail long enough for the gardener to come in and buy that plant,” said Mark. “And further, they want that plant to do well in the garden or landscape because then they’re going to come back and buy more plants. And mycorrhizae definitely helps with that.”

The way of the rice hull?

Through the years, there have been loads of research on using different additives in growing media to find something that will increase the chances of growing plants of the highest quality. Wood substrates, coir, bark—all of these we already know about and many have shown great promise.

And there are others—remember rice hulls? Many shrub and tree growers use them to cover the top of the containers to prevent weeds, moss

and algae from growing, but as a soil amendment, rice hulls never seemed to catch on with a lot of growers. Will mycorrhizae end up being the same? The suppliers of it only see the demand increasing.

“When you’re talking about everyone looking to the future—with water restrictions, fertilizer use restrictions, pesticide use restrictions—biological inoculants that we have available to us are just going to go up in use,” said Mark.

“There is a big difference between a soil amendment and a bio technology,” said Ed. “Amendments either work or not for a specific application. A biotechnology has lots of research to develop products and document benefits. Mycorrhizae has been in our product line for over 25 years and this is testament that this technology works for growers. With expansion of our product line, there is a definite need in the marketplace to use more mycorrhizae and we expect this to continue to grow into the future.”

Whenever a grower looks at inputs, he/she thinks, “How much more will this cost?” According to Blair and Mark, adding or using media with mycorrhizae isn’t much more than the cost of some pesticides. It’s a minimal cost at the wholesale grower level that can be picked up with a slight increase in the retail price, said Mark.

“There will be a tiny increase in cost, of course, at the gardener level at retail or even at the landscape level. But, in the end, if it makes the plant survive that much better, isn’t it worth it if you’re talking only pennies per plant?” he said.

Blair agrees. “People are looking toward different ways to produce a better product,” he said. “When you look at mycorrhizae, it’s like insurance. Where [growers] make their money is less losses. The survivability of the plants is significantly improved with mycorrhizae. Your plants look better at retail—they can hold up longer and look better, so they’re going to sell better. They’re more likely to have shelf appeal and you’ll sell more.” **GT**

Benefits of Mycorrhizae (according to research and trials)

- Improved plant root development and plant growth
- Increased crop vigor, plant quality and quantity of flowers/fruits
- Improved nutrient and water intake
- Increased resistance to stress and root disease, and resistance to transplant shock