

TECHNICAL INFORMATION

Soil Audit and Nutrient Management

MYCORRHIZAL FUNGI

- **What are they?**
- **Why are they important to you?**
- **How do I get them?**
- **Why don't I already have them in my soil?**
- **What will they do for me?**

How to pronounce it: "Myco-ryzal (singular) and Myco-ryzay (plural) which means:

Mychor = fungus,

Rhizae = root of the plant

so it is a fungal root.

What are they?

A living organism that has developed over millions of years living in the soil as a symbiotic and beneficial aid to plant growth.

These amazing organisms imbed themselves into the hair roots of a plant and live from the sugars provided by the host plant. In return, the mycorrhizae will spread their hyphae (like a cobweb) into the soil, where it collects nutrients, phosphate nitrogen, trace minerals, water etc and transports them back directly to the plant, thereby improving plant health and increasing yield potential.

Why are they important to you?

Because they will help to protect your crop from soil borne pathogens, increase nutrient uptake by taking minerals from the 'locked-up' soil reserves and bringing them directly into your crop. Essentially they act as root extensions, effectively increasing rooting area by anything up to 600 times.

How do you get them

Well they should already be there, but they are not because we have killed them off with modern chemical farming systems - BUT now you can get them back! Although these amazing fungi have been studied, written about and much admired for years, to re-instate them into deficient soils has been very difficult and expensive – until recently, when we have been able to isolate them, freeze dry and pack them into a medium that will hold them in suspension and liberate them when you ready.



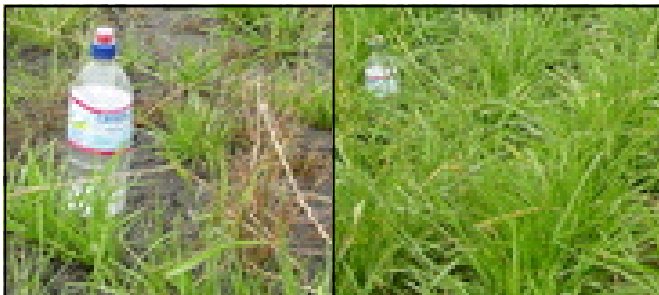
Above: Plant on left-hand side has been treated with mycorrhizal inoculant and shows much better rooting system.

Just a kilo or so per hectare will supply millions of spores that will find 'homes' in the roots of your crop and spread throughout the field; in fact if you would only feed them and look after them, they will continue to multiply, capturing carbon, building humus and creating an ideal soil for crops to grow in.

BIO - Logical farming works!

Some crops will not tolerate these fungi and will grow happily without them and indeed may even kill them; these are Brassica crops such as OSR, mustard, cabbage etc, also sugar beet, swedes and other similar root crops. When these crops are grown in a rotation, it will be necessary to replenish the soil after this crop is harvested. For some crops it could be worth drilling with the seed so that the spores engage as quickly as possible - potatoes for example; even grass seed could be mixed with the freeze dried mycorrhizal fungi and applied at the time of re-seeding.

The benefit can be seen from the photo below.



Above: Forage Grass. Left without and right with mycorrhizae. (Density shown by presence of plastic bottle).

Why isn't it already in your soil?

As I mentioned earlier, the mycorrhizae have pretty much been annihilated by the modern farming methods - both chemicals and soil management. Many fungicides will kill or damage mycorrhizal fungi, but only when they are active in the soil; some seed dressings will do it and so will glyphosate, but one of the biggest killers is excessive cultivation, especially the power harrow. This damned 'infidel' of a cultivating tool, is responsible for more soil destruction than any other tool ever produced. Simple ploughing of a crumbly soil - not too deep and gently levelled then pressed and drilled, will do some damage but the mycorrhizal fungi will recover. When you plough to 12"-14" in wide furrows (necessary to fit the tyres of your big tractor) then chop up with discs, harrow, cultivate 2-3-4- up to 8 passes - then it's goodbye mycorrhizae!

What will they do for you?

- Capture carbon, build humus and improve soil structure.
- Gather minerals from the soil and feed directly into your crop, minerals like phosphate, calcium and trace elements.

- Protect your crops from soil borne diseases like Pythium, Rhizoctonia and Fusarium.
- Effectively increase active rooting area of the plant by up to 600%, increasing yield potential.
- Min-till or direct drill and mycorrhizal fungi can capture more carbon than is being produced and could STOP global warming dead, but only if ALL countries did it, but you can play a huge role in this and you could even be paid for it if you can go along with the idea of carbon capture and exchange.
- Mycorrhizae fungi will cause soil particles to aggregate which in turn improves water infiltration, increase air space and encourage other beneficial microbes to build humus, fix nitrogen and improve soil structure.
- They keep working for as long as you have the plants photosynthesising, pushing sugars into the roots, these wonderful organisms will multiply until all soil is covered in them; BUT toxic chemistry will destroy them so when you have to use these chemicals (even NPK) you need to feed the soil to help these really important organisms to recover.

SO WHAT NEXT

We will be including a small amount in the NEW **Better Grass Xtra** product, but if you are re-seeding you should apply up to 1½ kg/ha with the grass seed - for cereals we will be putting a small amount into next year's **Bio-Mulch** together with the other beneficial decomposers and nitrogen fixers. This new **Bio-Mulch** really is the bee's knees for soil; Mycorrhizal Fungi is also available now in 20 kg packs on its own or with the nitrogen fixers - great for organic growers- you will have to ask for more information.