BENEFITS OF MYCORRHIZAL FUNGI

FAST FOOD FOR PLANTS

Root absorption of nitrogen was thought to be restricted to inorganic forms of nitrogen such as N03, N02 and NH4. Like other nutrients. But we now know that mycorrhizal fungi can transport entire molecules of amino acids and move them into the root cell and where they then continue to the chloroplasts. Where the nitrogen is used for photosynthesis. This means that the fungi and their host plant sidestep the extensive and time-consuming decomposition processes by bacteria and other soil organisms normally required before nitrogen is released in inorganic, plant-usable forms.

PROTECT PLANTS

Mycorrhizae protect roots against fungi causing root disease.

Plants with mycorrhizal associations are generally more resistant to pests and diseases.

INCREASE PLANT ACCESS TO WATER AND NUTRIENTS

Extensive mycorrhizal fungi hyphae networks increase plant access to and uptake of water and nutrients (phosphate, nitrogen, potassium, sulphur, magnesium, iron, calcium, and micronutrients). Often by 50 times!

SOIL STRUCTURAL ENGINEERS

Glomalin is released into the soil when Mycorrhizal fungi hyphae die. Glomalin creates aggregates by attaching to and lumping together mineral particles (sand, silt and clay) and organic material.

RECYCLING PLANT NUTRIENTS

Mycorrhizal fungi release enzymes which break down and release nutrients from fibrous parts of plants, hard shells of insects, and animal bones.

WATER AND NUTRIENT STORAGE

Arbuscular Mycorrhizal Fungi form structures called vesicles within cells in plant roots. These structures store nutrients, lipids and water. A reservior for the plant when supplies are limited.

EXTRACT NUTRIENTS FROM MINERALS IN SOIL

Mycorrhizal fungi release enzymes which break down and release nutrients from mineral particles in soil.

INCREASE THE AVAILABILITY OF PHOSPHATE

Mycorrhizal fungi produce enzymes removing the chemical bonds tying up phosphorus in soil.

Phosphate is often present in soil but not in a form unavaiable to plants. At the tips of the mycorrhizal hyphae root exudates are released to feed phosphate-solubilizing bacteria. These bacteria produce specialised enzymes making phosphate available to plants.

CARBON SEQUESTRATION

Mycorrhizal fungi build stable humic compounds sequestrating carbon when a proportion of the carbon in the root exudates is combined with nitrogen from free-living nitrogen-fixing bacteria in soil.

Mycorrhizal fungi produce Glomalin, a carbon - rich durable protein to coat and protect their hyphae. Glomalin is 20-40% carbon. When the hyphae die the Glomalin is released into soil and creates stable soil aggregates by attaching to and lumping together soil mineral particles (sand, silt and clay) and organic material.

© Learning from Nature