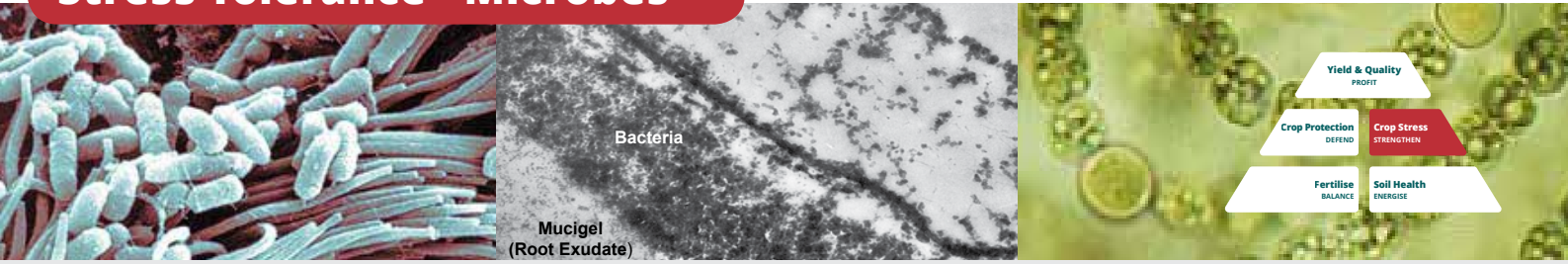


Stress Tolerance - Microbes



Why soil microbe numbers down

Soil microbial biomass and diversity has significantly declined with intensive agriculture which has negatively impacted on yield, disease & farm sustainability.

Research:

There is a clear relation between decline of soil microbial activity and the use of agrochemicals. (Geense et al 2015)

Yardim and Edwards found under field conditions that frequent use of fungicides, herbicides and insecticides caused a decrease in bacterial-feeding, fungal-feeding, predatory and omnivorous nematodes and an increase in plant-parasitic nematodes. (Geense et al 2015; Bailey 2003; Imfeld 2012)

Moeskops 2010 and Ratnadass 2012 found agrochemicals had a strong negative impact on soil enzyme activity.

Why microbes are important

Soil microbes are the key to creating disease suppressive soils. They have a pivotal role in improving soil health and reducing disease.

Research

Disease suppression is related to:

- a global increase in soil microbial biomass - A large biomass creates a competitive environment deleterious for the pathogens. (Janvier 2007; Ratnadass 2012)
- diversity and structure of microbial communities - A greater biodiversity (number of species present in the ecosystem) has long been synonymous with better soil quality, diversity being considered as a key component of soil stability and function. (Janvier 2007) Suppressive soils consistently have higher populations of actinomycetes and bacteria than do soils conducive to diseases. (Ratnadass 2012)
- the total amount of microbiological activity at a time critical to the pathogen. (Janvier 2007)
- good soil health and soil biota - Soil-borne diseases are most damaging when soil conditions are poor as a result of inadequate drainage, poor soil structure, low organic matter, low soil fertility, and high soil compaction. (Abawi 2000; Bailey 2003)

The Solution

Organic amendments are a cost-effective way to bring microbes into intensive agricultural systems and create disease suppressive soils.

Research:

- Organic amendments increase microbial biomass which reduces disease. (Janvier 2007)
- Organic inputs increase the general level of microbial activity. The more microbes there are in the soil, the greater are the chances that some of them will be antagonistic to pathogens (Altieri 1999; Widmer and Abawi 2002). Organic inputs can improve the soil biological status by increasing both the diversity and the size of populations of beneficial species. (Ratnadass 2012)
- Stimulating soil microbial diversity and activity (with OA), thus increasing competition, can reduce soil pathogen conduciveness. (Geense 2015)
- The toxicity of pesticides to soil micro-organisms is markedly reduced in soils containing large amounts of organic matter or amendments. (Imfeld 2012)

SFS Targeted Inputs

SFS have developed key soil health inputs to get microbes working for you to create disease suppressive soils.

SFS inputs & programs target 4 key areas:

- **Microbial Activity** - increasing microbes
- **Microbial Diversity** - adding beneficial microbes
- **Active Carbon** - feeds microbes + much more
- **Energise the Plant** - root growth & photosynthesis

Talk to us now about what will work best for you.

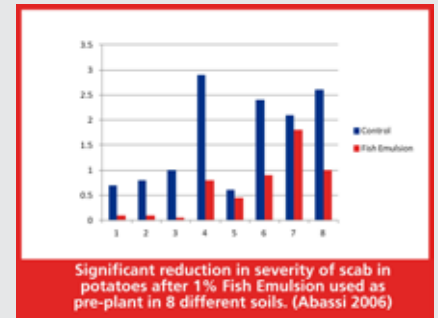
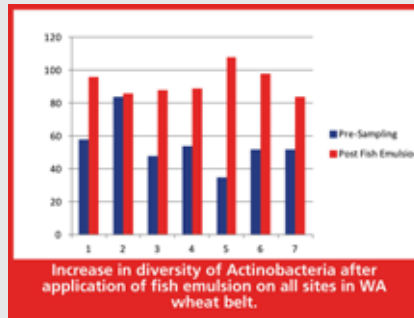


Harness the power of nature

Microbial Activity

Feed the microbes to:

- Improve nutrient availability
- Reduces root disease
- Improves water penetration



Microbial Diversity

Specific microbes designed to create healthy crops.

MicroPlus

Activates nutrient uptake
Colonises roots to outcompete pathogens

Contains beneficial fungi & bacteria including Mycorrhiza, Trichoderma, Bacillus, Streptomyces, Pseudomonas, Nitrogen fixing bacteria and more.

Actinobact

Naturally colonises the roots and out-competes pathogens.

Contains fast acting beneficial microbes Streptomyces lydicus + Bacillus subtilis.



Add Active Carbon

Providing a carbon source to feed soil microbes.

Humic & fulvic are the most active component of soil organic matter and a cost-effective way to get benefits of soil organic matter.

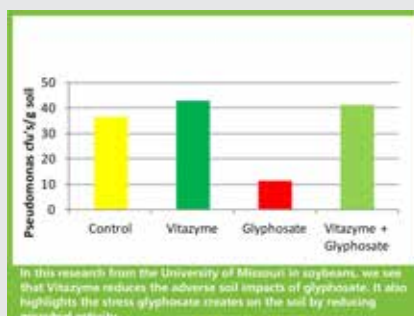


Energise the plant

Improve root growth and photosynthesis by getting the plant-soil system working for your crop.

Key components are bioactive at low concentrations including cytokinins, auxins, betaines, alginates, triacontanol, brassinosteroids.

Decades of research on Kelp & Vitazyme.



Information & Advice

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