

# TECHNICAL INFORMATION

## Soil Audit and Nutrient Management

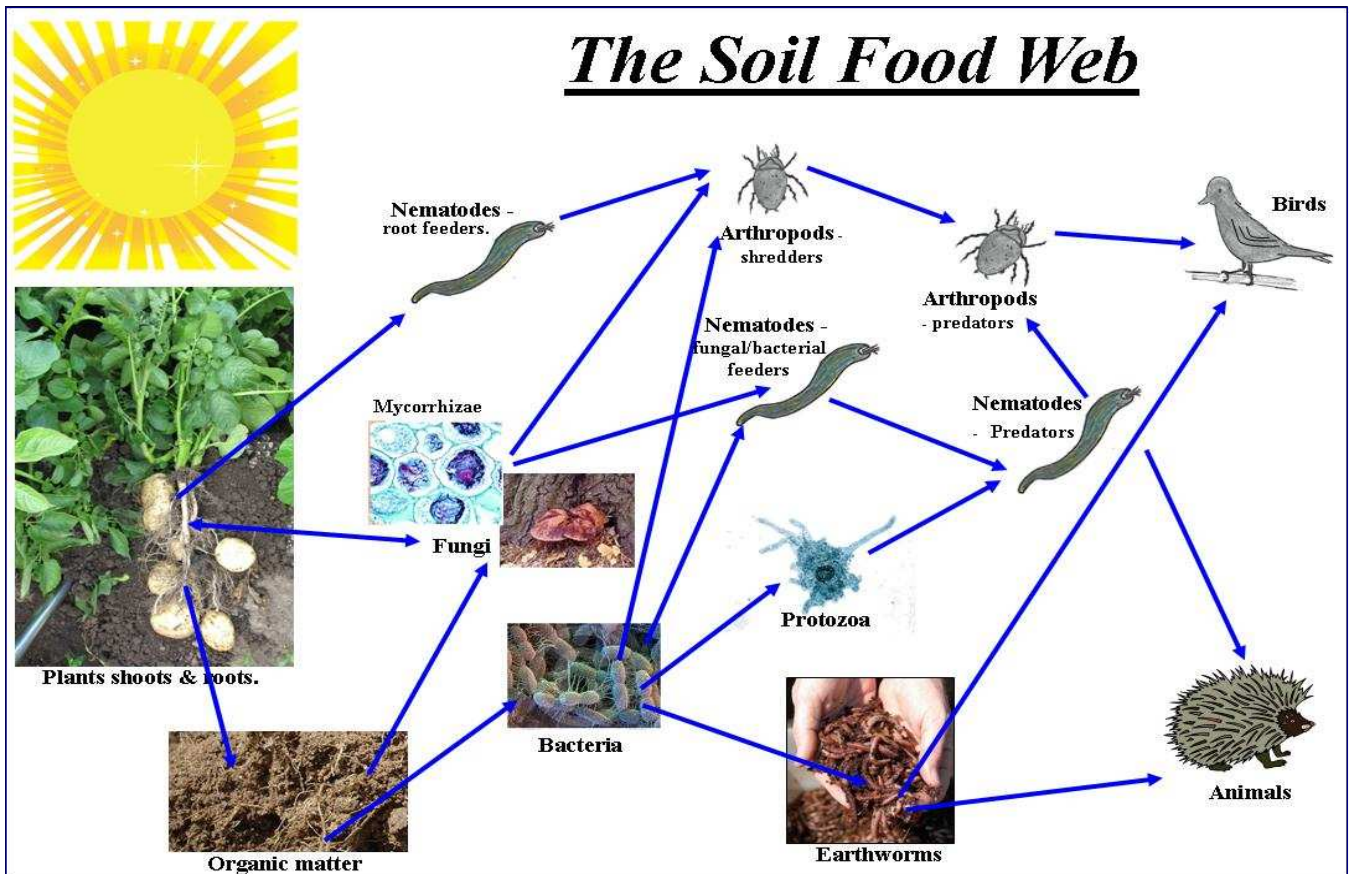
### Soil Biology & Compost Tea

More and more of you are now aware of the importance of maintaining a healthy soil and there is some discussion about the use of compost tea as a plant drench. For those of you not familiar with these terms, briefly compost tea is what you get after 'brewing' a small amount of good quality compost. This brew will contain zillions (hopefully) of beneficial micro-organisms that when applied to the leaf of a plant will live on that leaf, living from the sugars exuded by the plant. If you can get the leaf fully saturated with these 'beneficials' then when the nasty bugs that cause disease come along they cannot get a look in and the plant is not infected - Sounds great and it is, but there are many problems, not least getting good quality compost in the first place. Most compost is not made to the high standard required if you want to use it as a brew, the problem is you will brew up

whatever is in the compost.

If this contains pathogens and you then apply it to your crop, well you had better be standing by with your fungicides before you lose your crop! It can be done - It IS being done successfully, but mostly in smaller high-value crops like vineyards where very careful attention to detail can be maintained - even washing the brewer and application equipment correctly is essential. Very few farmers have the time, patience or facilities to make this a viable alternative to fungicides. Soil biology is a little easier, and the new *Bio-Mulch* supplies the correct balance and ratios of a wide range of beneficial micro-organisms. The principle is the same as above - get the roots of your crop infested with the 'beneficials', and the pathogens can't get in; brilliant for reducing the effects of Take-all, Fusarium, Pythium etc.

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BIO-Logical farming works!

There is a soil test for this biological balance, it's called The Soil Foodweb Analysis and will measure a wide range of microbial organisms and fungi - as in all things, it is the balance that is important not the quantities, for example we can find very high levels of a pathogenic nematode, but as long as there is a high level of

predators then it doesn't matter.

Unfortunately this is when it all goes wrong, most soils have a major imbalance of bacteria to fungi, indeed many intensive arable soils have little or no fungi at all and what is there is of the pathogenic variety - no wonder soil borne disease is rampant!

## INDEPENDENT SOIL SERVICES

*Independent analysis & advice for Soil Nutrient Management*

### SOIL FOODWEB ANALYSIS

**FOR: J G Goring**

**Herefordshire**

**FIELD: 12 acres**

**CROP:**

**Wheat**

	DESIRED RANGE	ACTUAL LEVEL	DEFICIENT	LOW	ADEQUATE	GOOD	HIGH
<b>BACTERIA</b>							
Active Bacterial Biomass	1.0-5.0	0.72		X			
Total Bacterial Biomass	175-300	282				X	
<b>FUNGI</b>							
Active Fungal Biomass	1.0-5.0	NR					
Total Fungal Biomass	175-300	37	X				
<b>HYPHAE</b>							
Hyphal Diameter	-	2.5			X		
<b>PROTOZOA</b>							
Flagellates	5000+	58805				X	
Amoebae	5000+	43651				X	
Ciliates	50-100	39		X			
<b>NEMATODES</b>							
Total Nematode Numbers	10-20	6.8	X				
<b>MYCORRHIZAE</b>							
% Mycorrhizal Colonization of root	Note 4 40%-80%	0	X				
<b>ORGANISM RATIOS</b>							
Total Fungal:Total Bacteria Biomass	Note 5 0.5-1.5	0.13	X				
Active:Total Fungal Biomass	0.1-0.15	NR					
Active:Total Bacterial Biomass	0.1-0.15	NR					
Active Fungal:Active Bacterial Biomass	1:1	NR					
<b>NITROGEN</b>							
Plant Available N From Predators	-	250-270	N will be lost as ammonia as a result of compaction				
NR=Not recorded							

There are low levels of bacteria and fungal activity in this sample, therefore measures must be taken to ensure there is appropriate food in this soil to support this at a higher level of activity. The problem with these soils is that there is no mycorrhizal colonisation. This fungi is necessary in order to increase the efficiency of the uptake of plant nutrients such as nitrogen; to reduce the

risk of attack by pathogenic parasites including nematodes and also to enhance plant growth. We recommend the use of a biological stimulant such as *Bio-Mulch* which will also increase the diversity of bacteria and fungi.

You should inoculate with mycorrhizae (VAM) at planting and use *Bio-Mulch* to stimulate growth.