

Polyculture Soil Plan

This soil plan is used as a guide to evaluate resources to improve your desired yield.

What is your Yield?

Relevant knowledge improves outcomes!

Analyse: Soil, Water, Location, Plant health.

Understand how these things affect what you are managing.

Soil Tests: Carbon: Nitrogen ratio, Compaction, Total & Available Minerals (+chloride, sulphur) pH, Electroconductivity. (Balance is the key!)

Soil - Do you have enough Organic Matter (OM) for your yield?

Usually, the darker the colour the more OM.

Water - Source, Quality, Storage, Influences, limits, is remediation required?

Location – Topography, Weather. Variations in soil types

Plant Health - Green does not always mean healthy!

Composting - Mulch piles, Worm farm.

Other Considerations:

Weak Links

Are there any Social, Biological or Financial issues? E.g. Neighbours, Soil type.

Where is the money coming from? Are all decision makers working together toward a common goal?

Log Jams - What can stop you from success? Address the issues that slow down progress!

Planning - Improves beneficial outcomes! What does your resource base look like, and what do you want your Quality of life to be? It also gives a record of previous work which becomes a guide for future workers.

ROI (Return On Investment) What do you want this to be in the future?

Do you know how much time, money and energy to invest, and when do you want those investments back? What does it look like, and what happens if the ROI is zero or worse?

What are the limiting factors? **You need to Monitor All!**



Soil:



BOTH EFFECT THE LOCAL CLIMATE

Soil structure is the most relevant for a functioning landscape to thrive and sustain itself. At the core of a functioning landscape are effective water, nutrient, carbon and energy cycles. This takes all elements to be **in balance**. What is the history of the land?

Observe: soil texture, structure, porosity, moisture, depth (Top Soil+), and biological activity.

Soil texture; how does it feel in your hands, rough, course, hard to break or soft, moist, pliable?

Structure; (Bulk density) DIY Jar test! (see next page)

Porosity; Test compaction. Can water and oxygen infiltrate? Use a piece of 90mm pipe or similar to time how long 1 litre of water takes to infiltrate. Comparisons - Complete on different soil types and locations.

Depth; The different layers of soil types can guide you as to what you need to do. The deeper the water and oxygen can go the better the landscape can function.

Biological Activity; You are looking for any type of arthropod, worms, ants, spiders, fungi. What wildlife is existing in the space? Remember; **Balance**



Testing Your Own Soil:

Good soil starts with a balanced level of all necessary elements. Using this guide, you are looking for approximates of 30% sand, 30% silt, 25% clay and 3 to 15% organic matter, depending on what your yield is. All amounts will fluctuate so aiming for something close to those values is the ideal “Loam” for plant growth. Organic matter (OM) is very important for all the cycles to function; grasses need different types and levels of OM than woody plants.

More organic matter, means more biology is decomposing and extracting minerals for your plants while maintaining hydration! Deep, extensive root systems connected to fungi mean plants have more resilience to environmental variations.

Find out if your soil has the right mix of ingredients by using a glass jar, half filled with rain or distilled water.

You need to take approximately 200ml worth of soil from the top 30cm of the area you want to test. Add this soil to the jar with your water. Close the jar and shake until so all particles become suspended in the water. Place the jar somewhere safe and watch what happens. The sand will settle to the bottom first, then it takes a few hours for the silt to rest on top of that. The small clay particles can stay in suspension for hours and most of the organic matter will float to the top.

Wait 24 to 30 hours then measure the height of each layer. See example below for determining the percentage of each element in your soil sample.

Example of 150mm high total water

25mm Sand; **Example- 25 divide by 150 = 0.1666x100 = 16.66%** (Not enough!)

20mm Silt

20mm Clay

15mm OM



Water; Source, Quality, Storage, Influences, limits, Remediation!



Source; Where does your water come from? Test if you have concerns (chemicals, pathogens). Keep it on your land for as long as possible! Contours.

Are there any potential up or down stream issues you should address? You can store up to 150,000 litres per hectare in healthy OM rich top soil! OM can store up to 9 times its own weight in water, increasing the lands resilience to drought.

Do you need to purify the water? Microbes and beneficial fungi can decontaminate water in the soil. Reed beds can do the same, local native Macrophyte species are most appropriate.

Location; Topography – Variations in soil types are everywhere.



What weather and seasonal effects can influence your yield?

How do mountains, forests and grasslands effect weather and plant growth?

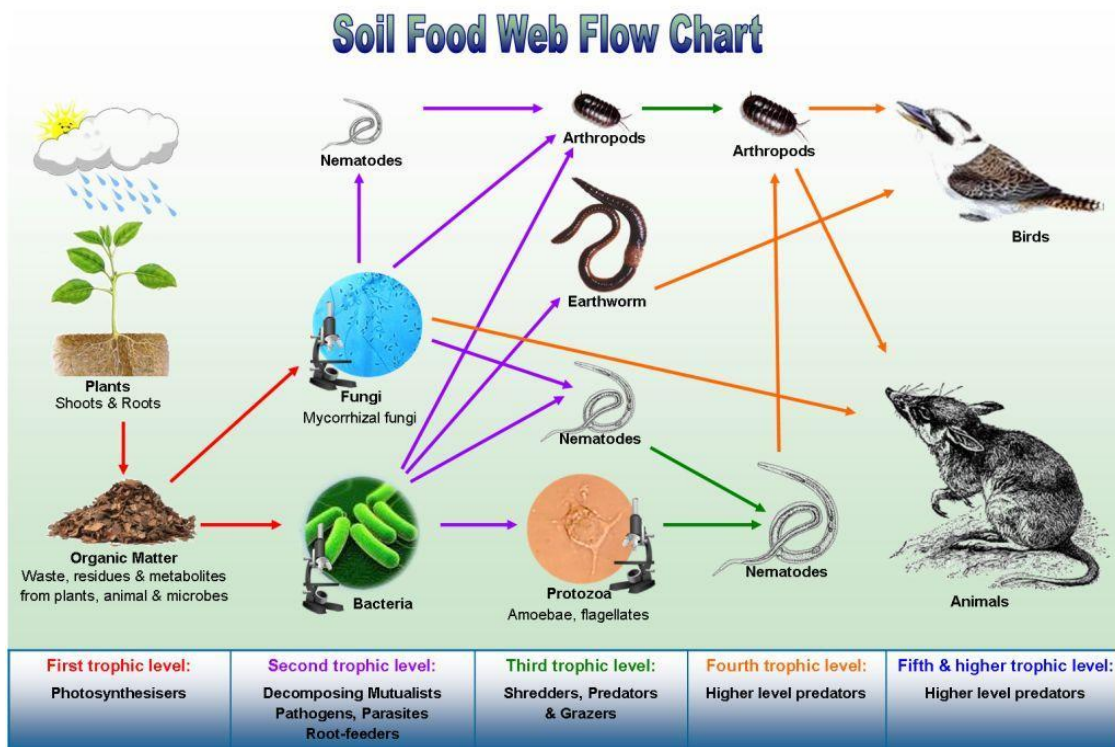
Planting forests on top of ridge lines can change the weather in the valley, where the grasslands can thrive. Shelter belts (see image above) can protect your yield and be visually pleasing. Use the topography to slow the flow of water. Learn the local weather patterns and where it comes from through the seasons. Plant to benefit from the natural weather cycles.



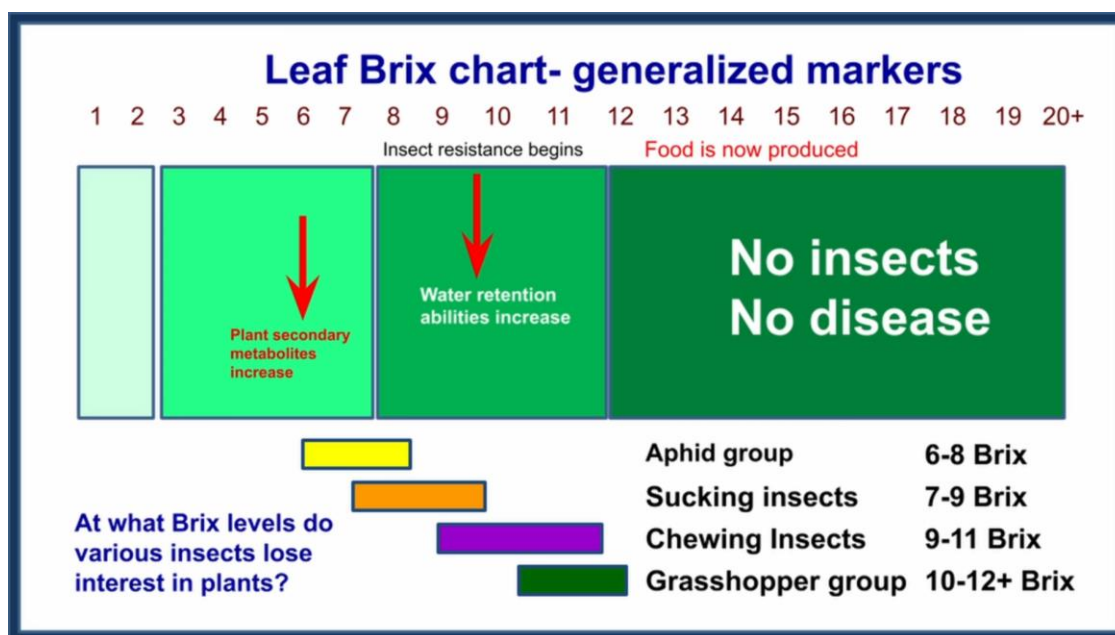
Plant Health; Requires a complete soil food web for maximum health.

Green does not always mean healthy!

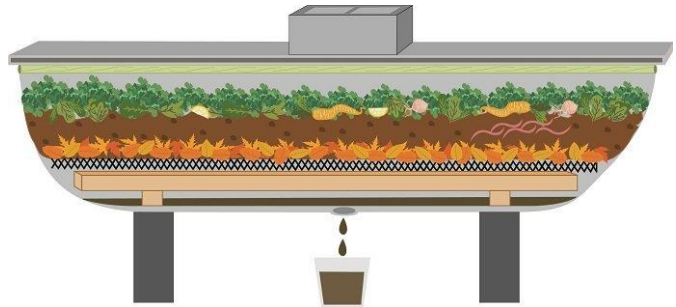
Gently look at the root density, colour and depth. See if any fungal hyphae growth is connected to the roots, cover it all back up ASAP. Add some WC. This is when you can also look for biological life.



Measure the plants health using a Refractometer. Sample leaf sap early afternoon on a sunny day.



Composting – Mulch piles offer a variety of opportunities.



Mulch can be used as ground cover around young plants to moderate soil temperature, moisture, act as a weed suppressant and increase biological activity. Sheep's wool is fantastic at the same jobs! You can bury kitchen scrap parcels in your mulch piles after soaking in worm casting extract liquid for biological diversity and faster decomposition. This will fire up the microbial activity which makes your "static compost pile" increasingly beneficial as an OM additive to your soil a lot sooner.

A Worm farm is composting on Steroids! Worm castings and extract liquid can prepare plants for a successful new life in the soil. Castings is the only natural product to deliver all microbes and plant available nutrients **in balance**! Mix in with OM to increase water holding capacity. Making extract liquids to apply to soil and when planting is a very economical way to add the necessary biology to your soil. Dunk the entire plant in a bucket of extract liquid, it will reward you! Adding 6% Basalt dust filtered into your extract liquids creates a highly Paramagnetic (Volcanic) soil and offers all minerals **in balance**. **Forget about the Leachate!**



Soaking frozen kitchen scraps in extract liquid



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Downloads: <https://polyculture.com.au/soil-services/> (Soil Research References)

<https://polyculture.com.au/worms/> (Worm Farming) (How to use)

Polyculture Services:

Worm farm castings & liquid extracts

Holistic management coaching

Soil Ecology & Planned grazing Workshops

Biological & mineral analysis of soils and liquids

On site Property Consultations

