SGLN's Enhancing Soil Biology Project
Tools for monitoring soil health on farm

Are you interested in improving the health of your soil?

Here are some ways you can monitor the health of your soil on farm.

Taking soil samples and having the soil chemistry tested by a laboratory is a common farming practice.

Soil biology can also be laboratory tested, which can show how much fungi and bacteria are present, along with nematodes and other soil microbes.

However, there are additional ways to monitor the health of the soil yourself, without needing to send samples away.

Visual Soil Assessment (VSA)
This method was developed by Graham Shepherd, and is explained in detail in the book 'Visual Soil Assessment Field Guide, Volume 2' by Graham Shepherd. It involves digging up a spade-width square of soil, and scoring it on a range of characteristics. The book includes a data sheet to guide this process, and photographs with examples of soil in poor, moderate and good condition.

Characteristics assessed include soil texture, structure, porosity, number and colour of soil mottles, soil colour, number and size of earthworms, soil smell, potential rooting depths, surface ponding and surface relief.

The VSA is a method that can be used to get an initial picture of the health of the soil in a plot. It can be repeated over time making it a good way to monitor for change when trialling new methods on your farm.

Australian Government | National Landcare Program

This project is supported by South Gippsland Landcare Network and funded through the Australian Government's National Landcare Program.

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We acknowledge the Traditional Owners of the land on which we work and meet.

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Penetrometer

A soil penetrometer tests the compaction level of soil by measuring its resistance to penetration. Resistance is measured in Pounds per Square Inch (PSI). The pointed tip of the penetrometer is designed to represent a plant root and 'feel' the resistance from soil that a plant root would.

To use a penetrometer, hold the T-piece handle and push it into the soil until the meter reads 300 PSI. This gives an indication of the depth at which roots cannot penetrate any further.

Push the penetrometer into the soil in multiple locations in the paddock, and record the average depth at which this occurs. Shallower depths indicate more compact soils.

Compacted soil is unhealthy because there is little oxygen available for microbial life, and plant roots, nutrient and water are unable to penetrate the soil.

Measuring compaction depth can help you identify compaction and decide what action if any is needed to remedy it. This could include aeration or multispecies pastures.

Using a garlic crush to extract juice from pasture

Refractometer (brix meter)

A brix meter measures the sugar content of a liquid, and can be used to measure the sugar levels of pasture. A high brix reading of 12 and above is desirable because it indicates higher nutrient levels for stock.

To use a brix meter, pick a sample of pasture plants similar to what a ruminant would eat. Crush in your hands to soften, then place in a garlic press.

Squeeze a drop of sap from the crushed pasture onto the prism contained in the brix meter. Close the flap and look through the eyepiece towards the light. The line where the colour changes is the brix reading.

Brix levels vary throughout the day, so it is important to measure brix at the same time of day each time (allowing for at least 2 hours of sunlight first).

More information

Videos and more information from the project are available at www.sgln.net.au.

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