SOIL HEALTH

Soil is a living system, and healthy soil should look, smell, and feel alive. Healthy soil can increase production, increase profits, and protect natural resources, such as air and water. Dig in to your soil to discover what your soil can tell you about its health and production potential.

Dig in and see

Healthy soil is darker in color, crumbly, and porous. It is home to worms and other organisms that squirm, creep, hop, or crawl. Healthy soil provides the right amount of air, water, and organic matter for microorganisms to thrive and for plants to grow. Soil that is functioning at its full potential is full of the roots of the healthy and strong plants it supports.

An unhealthy, poorly functioning soil appears lighter in color, is compacted or has poor structure, and contains limited roots and living things.

Dig in and smell

Healthy soil has a sweet and earthy aroma. This is the scent of geosmin, a byproduct of soil microbes called actinomycetes. These microbes decompose the tough plant and animal residues in and on the soil and bring nitrogen from the air into the soil to feed plants.

An unhealthy, out-of-balance soil smells sour or metallic, or like kitchen cleanser.

Dig in and feel

Healthy soil is easy to dig into. It is soft, moist, and crumbly, and allows plants to grow their roots more freely and unimpeded. This crumbly or granular structure is ideal because porous, healthy soil holds water for plants to use when they need it. Its increased water-holding capacity reduces runoff that can cause flooding, and increases the availability of water to plants during droughts.

An unhealthy, poorly functioning soil feels dry, crusty, and cloddy and does not crumble readily when pulled apart.

Dig a little, learn a lot

Understanding how healthy soils look, smell, and feel are the first steps towards achieving soil health. Dig a little! If you find soil that is out of balance, we can offer you tips to improve soil health. Please contact:

Dr. MURUKESAN KRISHNAPILLAI
RESEARCHER/EXTENSION SPECIALIST
COOPERATIVE RESEARCH AND EXTENSION
COLLEGE OF MICRONESIA-FSM
YAP CAMPUS
Tel: (691) 350-4319/5752

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KNOW YOUR SOIL

SOIL TO SPOON

Your food gets its start in the soil. Healthy soil is the cornerstone of a healthy, productive farm. Healthy soil is a living ecosystem.

Managing for soil health is one of the easiest and most effective ways for farmers to increase crop productivity and profitability while improving the environment. Improving soil health is key to long-term, sustainable agricultural production in our island.

SOIL TYPES ON YAP PROPER

There are two predominant upland soil types on Yap proper. They are: (i) Upland soils underlain by volcanic material (red soil), and Upland soils underlain by schist, a kind of rock (greenish clay soil).

Volcanic red soils cover the plateaus and hillsides in Gagil - Tomil region and south of Yap Proper. These are the most degraded and the least fertile soils in Yap. About 23.5 percent of Yap proper has volcanic soils.

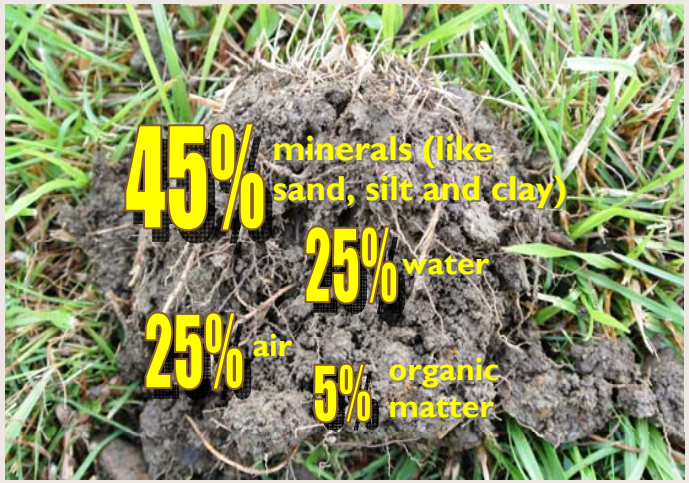
Upland soils underlain by schist are made up of a particular type of shrink/swell clay particles. It becomes sticky when wet and hard when dry. When wet, the rate of water movement in the soil slows down and may become difficult to grow certain crops.

Increasing soil organic matter improves soil health since organic matter affects several critical soil functions.

SOIL: THE POROUS FRONTIER

Like all living things, healthy soil needs air and water. Soil organisms need to air to breathe, and they also depend on water to deliver nutrients and support the food web. Without pores throughout the soil, air and water would be unable to reach those living organisms.

Healthy soil is made of ...



- Earthworms and dying roots create pores
- One acre of healthy soil can store more than 160,000 gallons of water in its upper foot
- Soil microbes (bacteria and fungi) produce sticky substances that hold soil particles together
- Disturbances, like tillage, destroy pore structure and kill earthworms and fungi.

EXPLORE YOUR ROOTS

Plant roots are "hot spots" for biological activities like nutrient cycling and soil aggregate stability. Both living roots are dead or dying roots improve water infiltration and break up compacted soils.

An abundance of roots helps to stabilize biological activities below ground, making more nutrients and water available to plants.

RICHES OF RESIDUE

Crop residue is not trash – it is a treasure. crop residue provides soil with a protective over that reduces erosion. It is also a source of carbon, the essential energy source for the soil food web.

- Residue improves water infiltration, reducing runoff, erosion, and sedimentation.
- Residue lowers soil temperature and protects microorganisms, reduces the amount of water lost through evaporation.
- Residue maintains soil moisture that crops can use in dry periods, resulting in higher yields without irrigation.
- Residue helps improve soil balance of nutrients like nitrogen and phosphorus.