

Soil Health

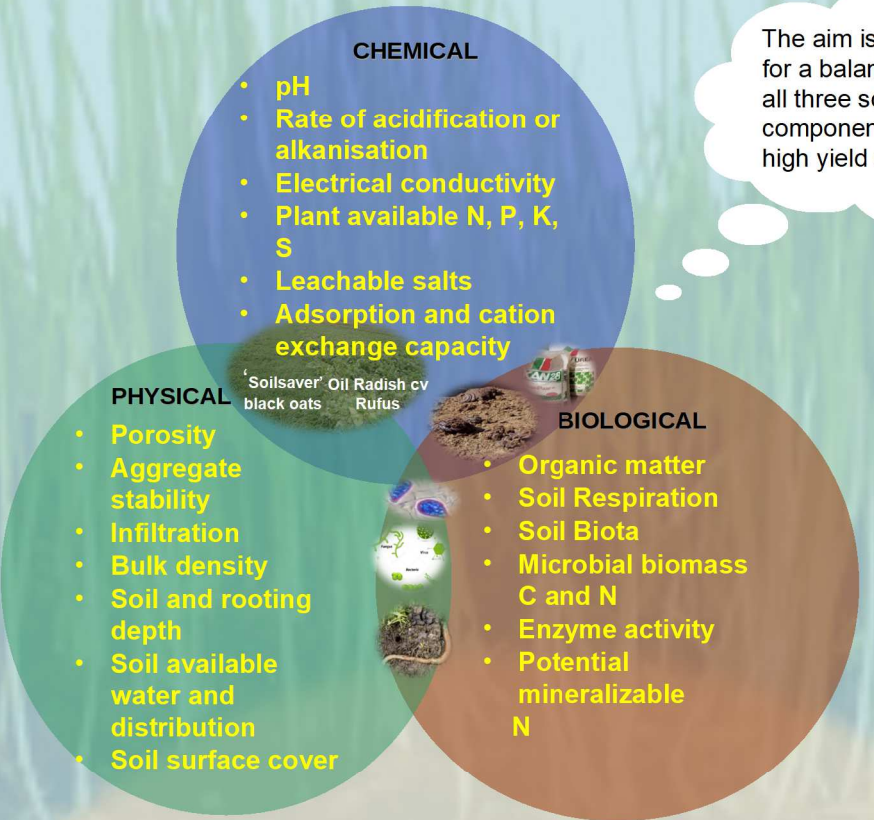
“Essentially, all life depends upon the soil There can be no life without soil and no soil without life; they have evolved together.”
Charles E. Kellog , 1938



What is soil health?

Soil health, also referred to as soil quality, is defined as the continued capacity of soil to function as a vital living ecosystem that sustains plants, animals, and humans. This definition speaks to the importance of managing soils so they are sustainable for future generations”

The aim is to manage for a balance between all three soil components enabling high yield of crops



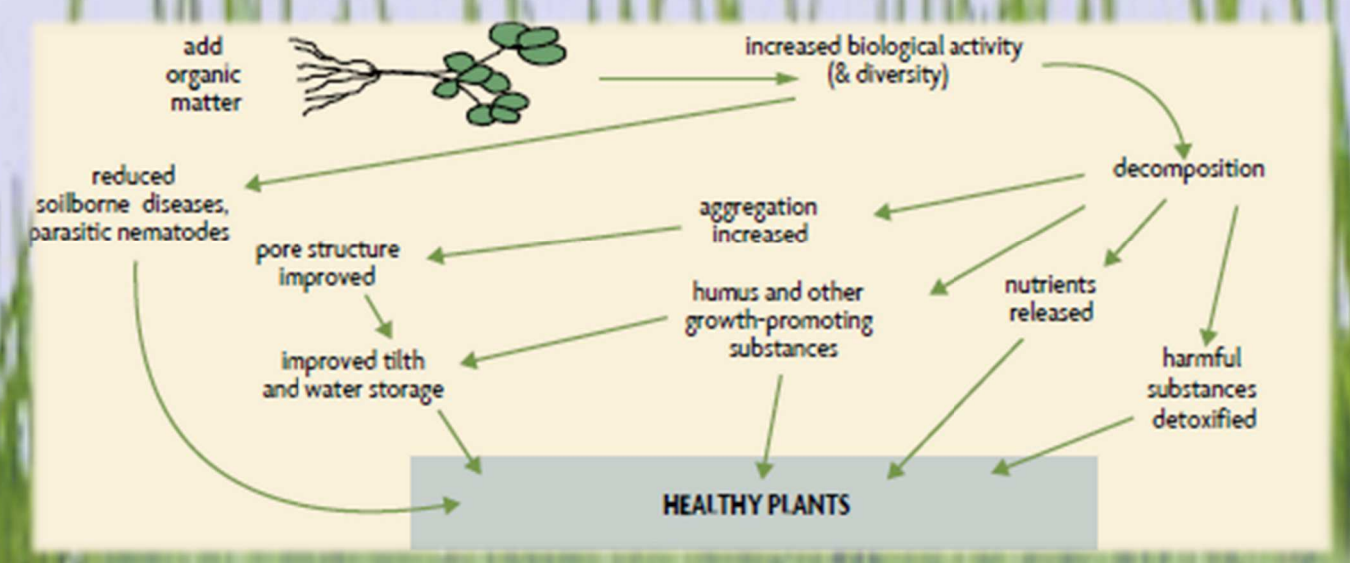
- SOIL PROCESSES AFFECTED:**
- Decomposition
 - Soil aggregate formation
 - Availability & movement of air & water
 - Plant, enzyme and microbial activity
 - Subsoil salinity
 - Formation of soil surface crusts

Climate change and soil health

- SOIL HEALTH INDICATORS:**
- Soil organic matter & soil C
 - Soil biota and microbial biomass
 - Enzyme activity
 - Aggregate stability
 - Infiltration, soil available water and distribution
 - Plant available nutrients
 - pH
 - EC

- CLIMATE CHANGE DRIVERS:**
- Rainfall
 - Temperature
 - CO₂
 - Atmospheric N deposition

Organic matter and its management are at the heart of soil health:



Soil is characterized as having good quality if it can:

- Retain and cycle nutrients
- Allow infiltration, and facilitate storage and filtration of water
- Promote and sustain root growth
- Maintain biodiversity and habitat
- Suppress pests, disease and weeds
- Sequester carbon
- Respond to management
- Resist degradation

All of these attributes of soil quality are largely a function of the living organisms within the soil. Crop residues and other organic materials serve as a food source for these soil organisms.



Soil ecology in balance: Healthier soil, greater biodiversity

- Low disturbance
- Low fertiliser inputs
- Practices that reduce compaction
- Diversification of crop lands
- Crop rotation
- Permanent residue cover
- Building organic matter
- Enhanced moisture conservation
- Timely irrigation management
- Sufficient soil fertility/ slow nutrient release
- Neutral pH

LAND MANAGEMENT INFLUENCES SOIL ECOLOGY

- High disturbance
- Tillage
- Burning
- Land degradation/ desertification
- Monoculture
- Overgrazing
- Soil erosion
- Pesticide application
- Compaction
- Loss of organic matter pools

Species imbalance: Some groups increasing in number, while others are eliminated

Sources
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