

Ecological approach to soil fertility and health in the Tropics

Practices that improve the soil and meet crops needs

Under current prevalent agricultural management, soil is being rapidly degraded due to erosion, fertility depletion and climate variability - posing serious threats to sustainable crop production and hence food security and livelihoods of smallholder farmers. Soil health is essential for the productivity of diverse crops and nutritious diets to improve the health of animals and humans. In ecological organic farming, improving the soil is the central focus, and this is achieved through a holistic approach.

This factsheet introduces soil fertility and health, explains how the holistic organic farming approach improves soil fertility, provides some practices which contribute to improving soil health and help meet the nutrient requirement of crops, animals and humans. The information is based on long-term experiments and on-farm research conducted in the scope of three projects across different countries in Africa, as well as Bolivia and India. Further products in the series, e.g., posters, videos and more, are linked in the 'Further information' section on the last page of this factsheet.



Key findings from the research

- Organic systems can **build up soil fertility** over the long-term if well managed.
- Soils under organic management in annual crops demonstrated **higher nutrient stores** (e.g., soil organic matter, nitrogen, potassium, calcium, micronutrients), higher biological activity, and improved soil properties.
- Healthy soil also have a **good structure** which prevents erosion and provides habitat to diverse and active organisms, both of which lessen risks for farmers.

Soil is the topmost layer on the land surface that acts as a medium for plant growth. It is made of of living and nonliving matter and support plants structurally while also providing them with water and nutrients for growth. From an agricultural perspective, soil is the most important production factor. Soils are diverse and complex systems, full of life, and home to fungi, plants, animals and micro-organisms, all interacting with each other to form the soil microcosm.

