1. What is the importance of humus to soil fertility?

Humus is the chemically stable remains of organic matter after decomposition of plant organic matter through microbial activities. It is primarily organic carbon. In addition to providing nutrients and habitat to organisms living in the soil, organic matter also binds soil particles into aggregates and improves the water holding capacity of soil.

1. What are the properties used to define soil horizons?

A soil horizon is defined by soil texture, structure, chemistry, and colour.

1. How does salinization result in land degradation?

Salinization occurs by the transfer of dissolved salts with upward moving capillary water, from lower horizons to upper soil horizons. Soils degraded by salinization are referred to as sodic soils, in reference to the high concentration of sodium (Na+). At a minimum, salinization results in diminished crop yields, but with continued salt concentration it eventually results in field abandonment. The subsequent loss of supporting vegetation increases the susceptibility of the soil to wind and water erosion.

1. Why do *terra preta* result in higher agricultural yields?

In terra preta the soils are anthropogenically enriched by burning plant material, food waste, and other organic detritus. The carbon content of terra pretta soils can be as high as 9%, which contrasts with < 1% in adjacent undisturbed soils. Crop yields in terra preta are at least double that of adjacent unmodified soils.

1. How is soil organic matter important to ecosystem services?

It is important for a variety of ecosystem services soils provide, including production of food, fibre, fuel, water purification, carbon sequestration, climate control, biodiversity, and as a source of new pharmaceuticals.