

Decomposition study using tea bags

A method to study soil quality

Large amounts of plant biomass are degraded back to their basic mineral components in the soil. To investigate how fast and complete this degradation occurs, there is a simple method. Green tea decomposes fast in the soil, rooibos tea is more difficult to degrade. Comparing the degradation of these two tea types allows the calculation of the *tea bag index*. This provides information on the capability of the soil to transform organic residues into nutrients for plants and to build soil humus. The technique is simple to use. Bury tea bags of those 2 tea types and leave them in the soil for 3 months to see how much is left. During this time, the hardworking little helpers in the soil will release nutrients from the tea to feed the nitrogen-fixing root nodules of a new generation of plants.



Teatime for soil organisms

After photosynthesis, decomposition in the soil is the second most important ecological process. Photosynthesis of plants produces biomass from CO₂, water, minerals and solar energy. Nature recycles these substances. Animals feed on it, excrete some of it again, and in the end soil organisms decompose the remains of the plants' biomass, but also

of dead animals, leaving behind the minerals that support plant growth.

Tea bags, which are made of non-biodegradable nylon mesh, provide a very convenient tool for studying the decomposition of plant material in the soil. The tea leaves are degraded over time by soil organisms. This reduces the mass of the tea. Therefore the weight loss is a measure of the decomposition by the soil organisms. The tea bags contain a relatively uniform organic material and are produced under standardised conditions. For the study, two different tea varieties, rooibos and green tea, are used.

Green tea decomposes quickly, while soil organisms are slow to decompose rooibos tea. Using these two different types of tea, makes it possible to compare the rates and stabilisation factors of decomposition between fields and soils. This approach is part of a global study of geoclimatic effects on decomposition.



In biologically active soil, soil organisms decompose tea faster than in soil of poor quality.