

Different Levels of Mulch

Relevance for climate change adaptation



Annual rainfall in Tanzania is showing decreasing trends especially for the south of the country and long dry periods of more than five months are being experienced. Coupled with increasing temperatures one of the main concerns in Tanzanian coffee production is expected to be the lack of soil moisture.

Soil consists of soil particles and pore space. Depending on what fills these pore spaces the soil is either dry, moist or wet. If the pore spaces are filled with gases such as oxygen, carbon dioxide and dinitrogen, the soil is very dry. If the pore spaces are filled with water up to maximum capacity, it is wet. After it has rained, the soil will first be wet, but due to gravity some of the water will drain and moist soil will remain.

Thus measures to conserve soil moisture and regulate soil temperature are highly important adaptation options. Otherwise adverse effects such as wilting or even dying of coffee trees are likely to show.

Different levels of mulch

Mulching means to cover topsoil and for this purpose any type of dry organic matter can be used. In Tanzania maize stalks, banana plant leaves and grasses that have been planted in between coffee rows, which are then being slashed, commonly serve as mulch. The organic material is simply spread over the ground ensuring that it does not touch the trunk of the coffee tree to avoid infections and rotting. The best time for the application of mulch is at the beginning of the rainy season.



Depending on the amount of mulch available, alternate rows between coffee lines can be mulched each year.

Mulch can support in lowering soil temperature, in retaining soil moisture, in slowing down surface runoff, in returning nutrients to the soil through decomposition, in preventing weed growth and in increasing soil organic matter. Some of these benefits even create a better environment for root growth, strengthening the coffee tree even further. As mulch absorbs more water than the soil is capable of, water from the mulch serves to recharge soil moisture in the case of heavy rains followed by a sequence of dry days. In very dry regions mulch may present a fire risk, though, especially when it includes woody material from tree prunings.

The effectiveness of mulching depends on the correct depth of the mulch layer for the local microclimate. Mulch layers of 20cm, 15cm, and 10cm can be suitable. Local agronomists can provide further advice on best mulching practices and further information is available at www.coffeandclimate.org.

Version: April 2013 | References: Baker 2013, ICP Tanzania 2008; Pictures: Ambrose 2012