



Tropentag, September 18-20, 2019, Kassel

“Filling gaps and removing traps
for sustainable resource management”

Impact of Organic and Conventional Farming Systems on Termite Presence, Diversity and Maize Crop Damage

JOHN J ANYANGO¹, DAVID BAUTZE², NOAH ADAMTEY²

¹*Kenyan Agricultural and Livestock Research Organization (KALRO), Kenya*

²*Research Institute of Organic Agriculture (FiBL), Dept. of International Cooperation, Switzerland*

Abstract

Termites are major soil macrofauna and within the literature, they are either depict as ‘pests’ or an important indicator for environmental sustainability. It is worthwhile to understand the extent to which termites can be managed to avoid crop damage and to improve the sustainability of farming systems. Therefore, the objectives of the study were to assess the effect of organic and conventional farming systems on termite presence, diversity, activity and crop damage. To achieve these objectives, we conducted a study in the maize crops on the on-going long-term systems comparisons trials (SysCom) at two sites in the Central Highlands of Kenya. The trial is comparing organic and conventional farming systems at two input levels: low input representing smallholder farmer practice and high input representing commercial scale practice.

The results showed higher termite abundance, incidence, activity, and diversity in the organic high input farming system compared to the other farming systems. However, the overall the damage patterns due to termites appeared to be a function of farming systems, plant growth stages, trial site, type and amount of fertiliser and/or organic material applied. During the study period, we identified nine different termite genera that belong to three subfamilies: (i) Macrotermitinae (genera: *Allodontotermes*, *Ancistrotermes*, *Macrotermes*, *Microtermes*, *Odontotermes*, and *Pseudocanthotermes*), (ii) Termitinae (*Amitermes* and *Cubitermes*) and (iii) Nasutitermitinae (*Trinervitermes*). Our findings demonstrate that certain farming systems attract termites, which are an important, and often beneficial, component of soil fauna. Nonetheless, damage patterns were not necessarily higher in these farming systems and thus not generally lead to higher yield loss.

Keywords: Farming systems, organic agriculture, termites