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Effects of conservation agriculture on surface termite activity in Central Mozambique

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Abstract
Crop residues are crucial for Conservation Agriculture (CA), a cropping system based on minimal soil disturbance, residue retention and crop rotations. At Sussundenga Research Station situated in Central Mozambique, investigated we the effects of CA on termite activity. The trial established in 2006 on loamy soils consisted of six CA treatments with different seeding technologies and crop rotations (i.e. rotations of maize with sunflower and beans) and one conventionally ploughed (CP) treatment with continues maize cultivation. Measurements were taken in the second cropping season after the trial establishment (in 2008). Surface termite activity was recorded by counting termite holes in a predefined raster on each plot. Furthermore, potential effects of termite activity on water infiltration were measured with a mini-rainfall-simulator. The results show that surface termite activity is significantly higher on CA than on CP plots. Apart from tillage treatment, the type of residues retained from the previous crop was important for the extent of termite activity. Termites preferred maize stalks and bean residues over sunflower residues. The time of planting and therefore the missing shade in some treatments resulted in fewer termite holes. The highest termite-hole densities (61 holes/m²) were found in manmade basins with maize, the lowest densities were found for conventional practice with continues maize cultivation (7 holes/m²). More termites are active on CA plots with residue retention.
During infiltration measurements no significant differences were found between CA and CP treatments. Many factors like measurement errors and weather events and soil behaviour influenced the results. Thus, no impact of higher amounts of termite holes on water infiltration was recorded. The study clearly shows that CA, already after two cropping seasons has an impact on biological activity.

Key words: conservation agriculture, infiltration, termites

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