Role of Ecosystem Services of Termite in Agriculture in Pendjari Region (Benin)

Ogoudedji Georges Pascal Codjovi[1], Nuppenau Ernst-August[2]

[1]University of Giessen, Institute of Agricultural Policy and Market Research, Germany
[2]University of Giessen, Institute of Agricultural Policy and Market Research,

Abstract

Termites and termite mounds revealed to be multipurpose utilisation for African local communities (termites and mushrooms for human food and chicken feed), mounds for soil fertilisation, fungus and health care plants' nutrition, traditional ceremonies and construction). Recently, researches implemented by BIOTA West Africa teams observed the decreasing of termite mounds in the populated area of Pendjari region. We present here the approach used to investigate the mound decreasing in the region and the relationship between mound population and sorghum yield.

The methodology used is based on descriptive statistic and regression using SPSS 16.0. Multiple regression of the dependent living termite mound population with its explanatories shows that "cotton in crops' rotation" has a negative influence on living termite mound density (coefficient= -0.499). The model is significant at 0.1% (with Adj. R Square equal to 20.6%). Then we define two categories of farming system: the cotton based farming system defined as the cropping system with cotton in the rotation during the last five years and the farming system without cotton defined as the cropping system without cotton in the rotation during the last five years (the mean value of farming duration is 5 years).

Rice land without cotton hosted more living _M. bellicosus_ termite mounds (90% of the total mounds or 1.8 living mounds/ha) than dead mounds (0.18). But in terms of number of mounds, the densities declined from cotton via beans, sorghum and maize to yams. Dead termite mounds had the highest percentage of mounds on beans (cotton system), sorghum (cotton system) and cotton crop land. This might suggest that mounds are killed during cotton farming.

Regression of the dependent "logarithm sorghum yield" function of the explanatory variable "logarithm living termite mound" gave a positive coefficient (0.168) and confirms that the relationship between sorghum yield and the density of living termite mound respects the Cobb-Douglas function. The model is significant at 5% with Adj. R square equal to 20.9%.