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Maize Production Risks in Pendjari Region, Benin: Chemical Fertiliser and Termite (*Macrotermes bellicosus*) Fertility Effects

OGOUEDEJI GEORGES PASCAL CODJOVI¹, ERNST-AUGUST NUPPENAU¹, KORB JUDITH²

¹*Justus-Liebig University Giessen, Institute of Agricultural Policy and Market Research, Germany*

²*University of Osnabruck, Institute of Behavioral Biology, Germany*

Abstract

Since the decline of cotton prices on the international market, maize as other crops is being cultivated intensively in Benin for income enhancement. As the chemical input prices are increasing, farmers are looking for alternative inputs. Termites are known to play important roles in soil fertilisation, and through termite mounds and the medicinal plants they host, they contribute to health care. It has been noted that biased estimation of production function estimates results from the lack of accountability risks. Since maize production in Benin has increased at a varying rate since 1998 it is important that we examine the risks associated with input use. The data for this study were collected from farmers from 6 villages in the district of Tanguieta, Pendjari Region, Benin. A total of 222 farmers were surveyed. Data from 128 respondents were found usable in the current analysis. Econometric techniques were used to estimate a Just-Pope maize production function, which was used to compute marginal products of inputs, and to identify quantity of chemical fertiliser and density of inhabited termite mound associated with the boundaries between stages I, II, and III of the production function. The response of maize yield to the density of inhabited termite mound is elastic, same to the quantity of chemical fertiliser used. The values of 1 inhabited termite mound and 5 inhabited termite mounds represent the boundaries for the stage II of the maize production function. However, as the density of inhabited termite mounds and the quantity of chemical fertiliser used per hectare increase, the production risk is expected to increase. Hence, farmers may be cautious in increasing the quantity of fertilisers and to a high density of inhabited termite mound on crop plot. Thus farmers may increase yield and production by augmenting cautiously the quantity of chemical fertiliser and choosing cautiously the crop plot hosting inhabited termite mound, other factors remaining constant.

Keywords: J-P production function, Pendjari, risk, termites