



Tropentag, September 19-21, 2012, Göttingen -  
Kassel/Witzenhausen

“Resilience of agricultural systems against crises”

## Scientific and Local Knowledge on Climate Change in Tropical West Africa: Do Farmers’ Perceptions Fit the Measured Changes?

OYÉMONBADÉ HERVÉ RODRIGUE AWOYE<sup>1</sup>, EULOGIE K. AGBOSSOU<sup>2</sup>, ROSAINE NERICE YEGBEMEY<sup>3</sup>, SENAKPON ERIC HAROLL KOKOYE<sup>4</sup>

<sup>1</sup>*Julius-Maximilians-University Wuerzburg, Inst. of Geography and Geology, Germany*

<sup>2</sup>*University of Abomey-Calavi, Fac. of Agricultural Sciences, Benin*

<sup>3</sup>*Justus-Liebig University Giessen, Institute of Project and Regional Planning, Germany*

<sup>4</sup>*Justus-Liebig University Giessen, Institute of Agricultural Policy and Market Research, Germany*

### Abstract

The perceptions of climate change shape farmers’ adaptation decisions. However, there is a huge debate on whether farmers’ perceptions of climate change are relevant, true and realistic for further adaptation analysis. This paper aims at comparing the climatic variability - scientific knowledge referring to rainfall and temperature variabilities - and the farmers’ perceptions - local knowledge - of climate change. Secondary data such as daily rainfall series from 1952 to 2010 and temperature series from 1950 to 2008 were collected, respectively from the rainfall station of Toffo and the synoptic station of Bohicon. Primary data on farmers’ socio-demographic characteristics and perceptions of climate change were collected by a sample of 184 household heads randomly selected in the Municipality of Toffo in the Republic of Benin. On the one hand, the secondary data reveal that the cumulate average rainfall over the sub-periods 1952–1969, 1970–1989, and 1990–2010 were 1111.7 mm year<sup>-1</sup>, 1014.1 mm year<sup>-1</sup>, and 1183.5 mm year<sup>-1</sup>, respectively. Besides this trend, the number of rainy days has declined and the wet seasons’ length has shortened. After 1978, the minimum and average temperature increased about 0.8°C and 0.7°C, respectively. Subsequently, there is a significant difference ( $p < 0.01\%$ ) between the averages temperature recorded between 1950–1978 and 1979–2008. From the primary data on the other hand, it came out that changes in rainfall and temperature patterns were respectively perceived by 93.5% and 97.8% of the respondents. As a general trend, the respondents perceived that rainfall quantity decreased as well as the number of rainy days and the length of the wet seasons. For 80% of the respondents temperature has increased. Most of the respondents situated the beginning of the perceived changes between 1985 and 1995. Considering rainfall, there were two main points: one between 1975 and 1985, and the second one between 1985 and 1992. As a result of the study, the changes perceived by the respondents corroborate very well the scientific results. The decrease in rainfall noticed by the respondents was only related to the decreased number of rainy days and the shortening of the wet seasons.

**Keywords:** Benin, climate change, climate variability, farmers’ perceptions