

CLIMATE CHANGE AND RESOURCE UTILIZATION IN NIGERIAN AGRICULTURE

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ABSTRACT

Climate change is already having predominantly adverse effects on the agricultural sector of the poorer parts of the world including Nigeria. Most crop and livestock production systems in Nigeria are low-technology based and are therefore heavily susceptible to environmental factors. This paper investigates the impact of climate change on agricultural resource utilization and productivity in Nigeria. The focus of the paper is the crop sector which is the more important in comparison to the livestock sector. Time series data on the production of major crops (cassava, maize, and guinea corn) from the three ecological zones (coastal and rainforest, Savanna, and Sahel) obtained from the Federal Ministry of Agriculture, Central Bank of Nigeria and National Bureau of Statistics were combined. Data collected were on output, land, labour, fertilizer, seed, and credit for a period of thirty five years. Also, data from the Nigerian Meteorological Agency (NIMET) on long-term climatic variables (temperature and precipitation) for thirty five years (1975-2009) were collected. Precipitation and temperature were related with inputs variables (land, labour, fertilizer, seed, and credit). The ordinary least square regression analysis (production function) fits the data best. Decreased precipitation, increased temperature, increased hectarage cultivated, increased credit, and increased use of fertilizer have positive and significant impact on the production and productivity of the crops. Furthermore, the results show that the impact of precipitation on production is stronger than that of temperature. This suggests that the impact of climate change on production and productivity could be negative if the change increases temperature but reduces precipitation at the same rate and simultaneously. Moreover, the impact of other inputs (land, labour, credit, fertilizer, and seed) on production and productivity are positive, which supposes that increasing the availability and accessibility of these input will enhance crop production and resilient adaptation to the impacts of climate change for Nigerian agriculture.

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