ASSESSMENT OF WEATHER VARIABILITY IMPACT ON RICE YIELD IN SOUTH WESTERN NIGERIA

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ABSTRACT

The scientific evidence on rainfall and temperature variability with its significant impacts on rice yield is now stronger than ever. Rice, a cereal crop, which can be upland or low land type, serves as staple food in most parts of Nigeria. This study assessed the weather variability impact on rice yield in south-western states of Nigeria. Rainfall, temperature and rice yield data (1991 – 2007) in the six states of south-western Nigeria were collected from the Federal Ministry of Agriculture, Abuja and analyzed using ArcGIS 9.2 version. A geo-spatial variation maps showing rainfall, temperature and rice yields in the study were generated in order to assess the correlation of rainfall and temperature on rice yield in the south-western part of Nigeria. Geographical Information Systems (GIS) Kriging interpolation and other geospatial analysis technique were used to assess and map the spatiotemporal e values. Rice yield time series were correlated with temperature and rainfall time series for individual state. Linear regression analysis was carried to deduce the prediction of rice yields on rainfall and temperature variability. Correlation of rice yields with growing seasonal rainfall gave the highest of 0.403 (Lagos, Ogun, Ondo and Ekiti) and lowest of -0.215 (Oyo). Meanwhile, correlation of rice yields with growing seasonal temperature gave highest of 0.453 (Ogun and Oyo) and lowest of -0.012 (Ondo and Ekiti). Rice yield and rainfall relationship ranges between y = 0.007*x + 0.13 and y = 0.018* x -0.8714 while rice yield and temperature relationship ranges from y = 0.5*x – 12.52 and y = 0.7* x -18.6.The rice farmers can make better rice farming plan despite the varying weather condition. The Geographic Information Systems (GIS) data base created and maps generated in the study areas can be used by policy makers and climate change mitigation.

Keywords: Temperature, rainfall, rice yield, GIS, southwestern states.