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Effect of integrated nutrient management on household resilience in Nigeria

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Abstract

Sustainable agricultural practices are essential for ensuring long-term food production and enhancing the resilience of farming households against economic and environmental shocks. Integrated Nutrient Management (INM) is increasingly recognised as a viable approach to achieving these objectives by optimising soil fertility through the balanced use of organic and inorganic inputs, along with other soil fertility management practices. This study examines the effect of INM adoption on the resilience of agricultural households in Nigeria using data from the GHS-Panel for 2015/2016 and 2018/2019. Data analysis was conducted using descriptive statistics, Resilience Index Measurement Analysis (RIMA II), Principal Component Analysis (PCA), and a Panel Fixed Effects Model.

The findings reveal that INM adoption remains low, with only 17.2 % of farmers adopting INM practices in 2015/2016, increasing marginally to 17.8 % in 2018/2019. The exclusive use of organic fertilisers declined from 11.3 % to 7.5 % over the same period, suggesting a shift away from sole reliance on natural fertilisation methods. Similarly, the adoption of inorganic fertilisers alone decreased from 28.5 % in 2015/2016 to 24.2 % in 2018/2019. Several factors influence INM adoption, including age, household size, literacy level, access to machinery, organic farming practices, extension services, livestock and land ownership, and sector of residence. The analysis further shows that INM adoption has a statistically significant positive impact on household resilience, with each unit increase in adoption improving resilience by 8.5 %. Other key determinants of resilience include age, years of education, non-farm income, and exposure to climate-related shocks.

The study underscores the need for targeted policies and interventions to enhance INM adoption, particularly among smallholder farmers. Strengthening agricultural extension services, increasing farmer awareness of INM benefits, and integrating INM into broader climate-smart agriculture strategies will be critical for building household resilience and ensuring sustainable food production in Nigeria.

Keywords: Household Resilience, integrated Nutrient management, Nigeria, Smallholder farmers, sustainable agriculture