# Adoption and Use Intensity of Sustainable Agricultural Practices (SAP) Among Young Rice Farmers in Ogun State, Nigeria: A Double Hurdle Approach

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**Abstract**

The study analysed the factors influencing the adoption and intensity of Sustainable Agricultural Practices (SAP) among young rice farmers in Ogun State, Nigeria. Multi-stage sampling procedure was employed in selecting 94 respondents for the study. Data was collected with the use of a structured interview schedule. Frequency counts, percentages, mean scores, and probit-Tobit 'censored' double hurdle regression were used to analyse the data. The findings revealed that most (73.4 %) of the respondents cultivated Ofada rice varieties on an average farm size of 1.1 hectares and reaped an average of 2.6 tonnes per hectare, mostly cultivated under a rain-fed system. SAP adopted and used by the respondents include farm planning and use of cropping calendar (97.9 %), planting at appropriate spacing (100 %), appropriate use of agrochemicals (100 %), selection of sites, dominated clay-loamy soil for planting (WMS = 1.93), timely planting (WMS = 2.62), market demand/supply trend, and quality improvement for rice (WMS = 2.60). The result of the double-hurdle regression revealed that years of education (β = 1.9313; 0.0144), farm size (β = 0.0339; 0.1444), and output (β = 0.2629; 0.0072) influenced the adoption and intensity of use of SAP. Based on the findings, the study recommends that the above factors should be considered by extension institutions in efforts to sustain continuous adoption of the practices for sustainable production in the study area.

**Keywords**: Adoption, Sustainable Agricultural Practices, Intensity of use, Rice, Young farmers

## Introduction

Rural young farmers contribute enormously to rice production with little access to production resources (Food and Agriculture Organization, 2018). These production resources are scarce and all strategies to maximize production through the utilization of sustainable production Technologies have not yielded their expected outcomes for optimum rice production, especially in Nigeria. Sustainable Agricultural Practices (SAP) is a collection of on-farm production techniques that ensure efficient use of resources for optimum yield without ignoring the sustainability of the entire production parameters including flora and fauna (FAO, 2020a). Several efforts in the past and present via training had been directed to farmers mostly youth to improve the productivity of rice. These include Competitive Africa Rice Initiative CARI, (2015), and the United Nations Development Programme UNDP, (2019) among others. Implying that efforts are needed in earnest to close the large gap in agricultural productivity (Tesfamicheal and Seife, 2018).

Improved rice varieties have the potential to yield up to 10M tons ha-1 which implies that farmers can attain corresponding higher yields when appropriate practices are adopted and utilized continuously (FAO, 2020b). It is worth noting that the current state of food insecurity coupled with a high level of degradation of the agroecological system requires embracing more productive and sustainable production technologies to salvage the entire food production system (FAO, 2017). More importantly, the report of Joseph, (2021) stressed the urgent need to avert the problem of food shortage, orchestrated by climate change, pest and disease problems, and malnutrition by adopting the use of modern biotechnological tools (Abdul *et al.*, 2016; Braham, 2022). Efficiency in production is not a linear process (Akinniran and Faleye, 2020). The report of Ogunmiyi and Fanifosi (2020), asserted that adoption decision precedes that of continuity in the usage of innovation. Obviously, the determinants of these could vary. These factors span through diverse parameters including socio-economic, and participation in training, among others and had a probability of influencing both the adoption and intensity of using these practices differently. However, there is a dearth of information in relation to these factors in the study area. The objective of the study was to examine the factors influencing the adoption and intensity of utilization of SAP among young rice farmers in Ogun State.

## Methodology

The study was carried out in Ogun State, southwest Nigeria based on her prominence in rice production in addition to suitable ecology (Nairaland, 2017; National Agricultural Extension Research Liaison Service NAERLS, 2020). A Multi-stage sampling technique was used to select 94 young rice farmers of the age range 18-35 years (FGN, 2009).

A validated structured interview schedule was used to collect information from the respondents. Thirty-two (32) SAP items were presented and adoption of the practices was measured nominally as YES= 1 or NO=0 while the intensity of utilization was measured on four (4) points rating scale of very often=3, often=2, sometime=1 and never=0. Prior to analysis, the data sets collected were tested for normality in the distribution pattern and homoscedasticity as suggested by (Faith, 2020). The double-hurdle regression model was used to establish the factors influencing the adoption and intensity of utilizing the practices by the respondents.

## Results and Discussion

The mean age of the young rice farmers was 29 years while the majority (78.8 %) were males. Most (73.4 %) of the respondents cultivated OFADA on an average farm size of 1.1 hectares and reaped an average of 2.6 tons per hectare mostly under a rain-fed system. The major SAP utilized by the respondents at each stage of operation includes: farm planning and use of a cropping calendar (97.9 %), planting at appropriate spacing of 20cm x 25cm or 30cm by 2-3 cm depth (100 %) and Appropriate use of agrochemicals (100%) while the most intensively utilized SAP were on selection of sites dominated with clayey-loamy soil for planting (WMS=1.93), timely planting (WMS=2.62) and market demand/supply trend and quality improvement for rice. (WMS=2.60). The results of double-hurdle regression models revealed that years of education (β = 1.931305; 0.0144022), farm size (β= 0.0338631; 0.1444465) and output (β=0.262897; 0.00718904) jointly influenced adoption and intensity of using SAP.

## Conclusion

It was concluded that years of education, farm size and output had an influence on both the adoption and intensity of using Sustainable Agricultural Practices.

## Recommendation

This study therefore recommends that the above should be considered jointly by extension institutions in efforts to ensure sustainable rice production in Ogun State, Nigeria.

## Declaration of interest

The authors declare no conflict of interest.

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