Adamawa State University Global Journal of Geography and Environmental Sciences
(ADSU-GJGES)
Volume 05 Issue 1, 2025
ISSN: 2651-3830 (Print); 2756-4142 (Online)

Website: gjges.adsu.edu.ng Email: gjges@adsu.edu.ng

8ORIGINAL RESEARCH ARTICLE

Sustainability of Irrigated Rice Production among Beneficiaries of the Anchor Borrowers Programme in Patigi Local Government Area, Kwara State

Shaaba, Mohammed & Tunde, Afolabi Monisola
Department of Geography & Environmental Management, University of Ilorin

ARTICLE INFO

Article History:
Received 22nd October 2025
Revised 24th September 2025
Accepted 20th October 2025

Keywords:
- Anchor Borrowers Programme;
- Farming;
- Income;
- Irrigated Rice;
- Sustainability

***Corresponding Author:**
E-mail
shaabamohammed60@gmail.com

ABSTRACT

This study examined the sustainability of irrigated rice production among beneficiaries of the Anchor Borrowers Programme (ABP) in Patigi Local Government Area of Kwara State, Nigeria. Specifically, it assessed farmers' perceptions of rice yield before and after the implementation of the progarmme and evaluated the impact of ABP in terms of income on farmers' welfare. Data were collected using a structured questionnaire administered to 300 respondents representing 10% of the total 3,000 beneficiaries reported by the Rice Farmers Association of Nigeria (RIFAN) in the 2021/2022 farming cycle. A purposive sampling technique was employed across the three districts of Patigi LGA. Descriptive statistics (simple percentages and frequency distributions) and inferential statistics (stepwise multiple regression analysis) were used to analyze the data. The findings revealed that all respondents were male, with 68.67% married and 94.33% under the age of 50. A significant proportion (60.33%) had household sizes ranging between 11 and 20 persons, while 16.67% had no formal education. Most respondents (79.0%) cultivated between 1 and 8 hectares of land, with only 46.33% owning the land the farmed. Furthermore, only 13% had less than 20years of farming experience. In terms of rice yield, prior to ABP, 83.33% of farmers produced 30 bags or fewer, while only 1.67% exceeded 30 bags. After the implementation of the programme, 60.33% of farmers reported yields above 30 bags, indicating a significant improvement in productivity. The regression analysis showed that 94.5% of the variation in irrigated rice production was explained by key variables such as labour input, land ownership, payment of medical bills, household size, increase in median income, farming experience, loan repayment capacity, age, and expenditure on children's education. The study concludes that the ABP has significantly improved rice production, income, and welfare of farmers in the study area, indicating its potential for sustainability. It recommends that continued participation in irrigated rice farming, supported by similar programmes could enhance food security and rural development. The success observed in Patigi can also serve as a replicable model for other rice-growing regions in Nigeria.

Introduction

Agriculture was the backbone of Nigeria's economy prior to the discovery of crude oil in commercial quantities in the late 1950s (Oushola et al, 2021). Before independence in1960, the sector dominated the export

market and served as a major source of foreign exchange earnings (Badejo & Adekeye, 2018). However, with the advent of oil wealth, successive Nigerian governments shifted focus away from agriculture, leading to the neglect of the sector. Despite various policies and initiatives introduced over the years to revitalize agriculture, progress has been hampered by weak political will and persistent structural challenges, including high interest rates on agricultural loans, unaffordable input costs, and stringent collateral requirements. Consequently, many smallholder farmers remain trapped at subsistence level producing just enough to feed their families, with little surplus for market (Badejo & Adekeye, 2018).

In the rice sub-sector, the Nigerian Rice Farmers Association (RIFAN) was established to support its members through improved production, marketing, processing and input supply (Ayinde *et al.* 2018). However, the full realization of this mission has been hindered by several factors. These include the limited availability of quality inputs, poor access to markets, inadequate processing knowledge and weak rural infrastructure. These constraints have significantly undermined the competitiveness of domestically produced rice, resulting in minimal value addition and heavy reliance on imports. (Ayinde et al., 2018).

To address the long standing challenges facing smallholder farmers, particularly those engaged in rice cultivation, the Federal Government of Nigeria in collaboration with the Central Bank of Nigeria (CBN) launched the Anchor Borrowers' Programme (ABP) in 2015, drawing inspiration from inaugurated by President Muhammed Buhari on November 17, 2015 drawing inspiration from successful models in other developing countroes such as India, where similar schemes operate under contract farming arrangements (Bommanahalli & Rangappa, 2016).

The ABP is designed to strengthen linkages among smallholder farmers, agro processors, and financial institutions. It facilitates access to finance and agricultural inputs, while encouraging market integration and value chain development. The programme aims to boost job creation, reduce rice importation, protect foreign reserves, alleviate rural poverty, and promote food self-sufficiency (Badejo & Adekeye, 2018). Under the programme participating farmers receive inputs in kind or cash, and upon harvest, supply their produce to a designated anchor, who in turn deposits the cash equivalent into the farmers' account (CBN, 2015).

Globally, sustainable rice production remains a critical issue due to the crop's significance in global food security, over 50% of the world's population relies on rice as a staple A sustainable rice production is a global concern since it is the dominant cereal crop which is vital for global food security as more than 50% of the global population consume it (Paul et al., 2019). Given its importance for food security, employment, and income generation, many national governments, particularly in Africa, are investing in the rice value chain to meet rising demand.

As a strategic food commodity due to its importance in food security, income and employment, governments in many countries of the world and Africa are intervening in its production in other to support the growing population (Paul et al., 2019). In line with national efforts, the Kwara State Government through various partnerships and agricultural policies has also adopted the Anchor Borrowers 'Programme to improve rice productivity and build a more sustainable agricultural sector. While several studies have evaluated the impact of ABP, most have

focused on rice output and income generation, particularly in states like Kebbi. There remains a gap in understanding the sustainability of rice production by ABP beneficiaries particularly in Kwara State. Therefore, this study seeks to fill that gap by investigating the sustainability of irrigated rice production under the Anchor Borrowers' Programme in Patigi Local Government Area, Kwara State, Nigeria. The study also examines farmers' perceptions of yield improvements, as well as the impact of ABP on their income ad overall welfare.

Materials and Methods

Patigi Local Government Area is in Kwara State, Nigeria. Its headquarter is the town of Patigi. It is located between latitudes 5°45′20″ East and 5°75′00″ East of the equator and between longitudes 8°43′64″ North and 8°73′00″ North of the Greenwich Meridian (Figure. 1). It is bounded in the North by river Niger, Kogi State in the East and South and Edu and Ifelodun LGA in the West (Olabode, 2008). Patigi LGA has a total land area of about 2924.62km^2, which is about 5% of the total land area of Kwara State (Tunde *et al.*, 2019). Patigi Local Government Area is primarily agrarian with the expanse of arable land and rich fertile soils. The major crops cultivated in the area include; rice, groundnut, melon, maize, guinea corn, cassava among others (Olabode 2008). The population of Patigi Local Government Area is about 110,852 as at 2006 census, which was projected at 166,400 by 2022 (NBS, 2022). There are many socio-economic activities within Patigi Local Government Area, among them are; agricultural, transportation, health, markets, educational, small scale shopping and religious activities (Olabode, 2008).

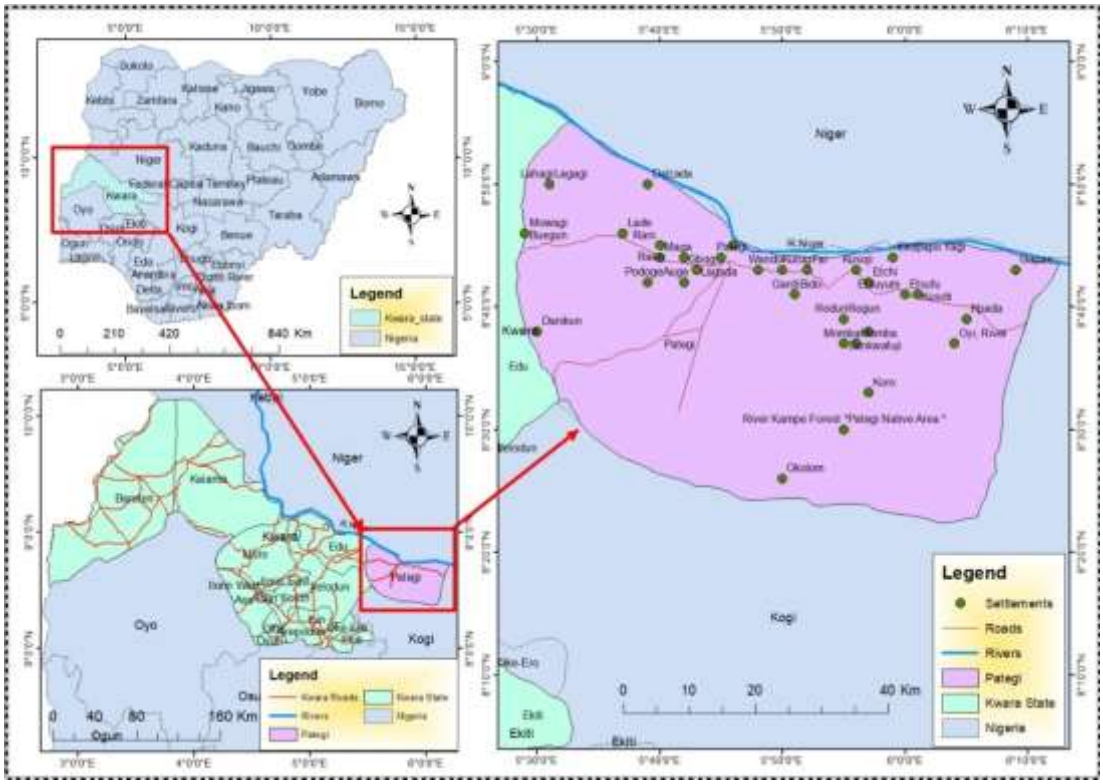

Figure 1: Patigi Local Government Area. **Insets:** Nigeria showing Kwara State and Kwara State
Source: Kwara State Physical Planning Authority, (2023)

ADSU-GJGES, 5(1) 104-116, October 2025
ISSN: 2705-1900 (Online); ISSN: 2251-0702 (Print)
Website: gjges.adsu.edu.ng Email: gjges@adsu.edu.ng

The study employed both primary and secondary data sources. Primary data were collected using copies of well-structured questionnaire. Secondary data were obtained through documentary review of relevant literature, including academic journals, articles, theses, textbooks, internet sources, newspapers, and other published materials relevant to the subject matter. The target population for this study comprised all beneficiaries of the 2020/2021 Anchor Borrowers' Programme (ABP) for dry season rice farming across the three districts of Patigi Local Government Area (LGA) IN Kwara State. According to the 2020/2021 report by the Rice Farmers Association of Nigeria (RIFAN), a total 3,000 farmers benefitted from ABP in Patigi LGA during the 2020/2021 dry season, which served as the sampling frame for this research.

The study adopted the recommendation of Hammond and McCullagh (1978) who suggested that a minimum sample of 10% is acceptable in social science research. Hence, 300farmers were randomly selected representing 10% of the total beneficiaries. The sample was equally distributed among the three districts, with 100 respondents each from Patigi, Lade and Kpada districts, respectively. A purposive sampling technique was employed to select participants from each district based on their active participation in the ABP during the specified season.

Descriptive statistics such as percentages and frequency distribution were employed to assess farmers' perception of rice yield levels before and after the implementation of the ABP. To determine the impact of rice yield (income) on farmers' welfare, a stepwise multiple regression analysis was conducted.

The formula is given as:

$$Y = a + b_1X_1 + b_2X_2 + \ldots\ldots + bnXn + e \quad (1)$$

Where; Y = Annual Yield (bag)/ Income (₦)
a = Constant (intercept)
b1….bn = Coefficients of explanatory variables
X1…..Xn = Independent variables
E = Error term
X1= expenses on food
X2 = amount of labour used (numbers)
X3 = expenses on children education
X4 = savings and thrifts
X5 = farm size (hectare)
X6 = reduction in loan/debt servicing
X7 = level of education (years of schooling)
X8 = age of farmer (years)
X9 = median income (₦)
X10 = extension agents (contact1, no contact 0)
X11 = household size (number)
X12 = farm experience (years)
X13 = land ownership (owner1, and otherwise0)
X14 = add more wives (yes 1, otherwise 0)
X15 = acquire more assets (yes 1, otherwise 0)
X16 = medical bills

Results and Discussion

The socio-demographic characteristics of the respondents from Table 1 indicate that there are no female respondents and 100.0% (the majority) are male respondents. This result suggests that male farmers predominate among beneficiaries of loan in the study area.

Table 1: Socio-Demographic Characteristics of the Respondents

Characteristics	Frequency	Percentage (%)
Gender		
Male	300	100.0
Female	00	0.0
Total	**300**	**100.0**
Age		
≤20	02	0.67
21-30	105	35.00
31-40	142	47.33
41-50	34	11.33
≥50	17	5.67
Total	**300**	**100.0**
Marital Status		
Married	206	68.67
Single	78	26.00
Divorced	11	3.66
Widowed	05	1.67
Total	**300**	**100.0**
Household Size		
≤10	108	36.00
11-20	181	60.33
≥20	11	3.67
Total	**300**	**100.0**
Educational Level		
Non-Formal	47	15.67
Primary	56	18.67
Secondary	110	36.66
Tertiary	87	29.00
Total	**300**	**100.0**
Farm Size (hectare)		
1 – 2	15	5.00
3 – 4	88	29.33
5 – 6	71	23.67
7 – 8	63	21
> 9	63	21
Total	**300**	**100.0**
Farm Ownership		
Owned	139	46.33
Rent	64	21.33
Borrow	97	30.33
Total	**300**	**100.0**
Farming Experience		
< 20	39	13.00
21 – 40	186	62.00
> 40	75	25.00
Total	**300**	**100.0**

Source: Author's fieldwork (2025)

The table further reveals that 94.33% of the sampled respondents are less the 50years of age. This means that the majority are in economically productive age. Respondents' marital status reveals that majority (68.67%) are married. It is anticipated that marital status will contribute to the labour needed to sustain the responders on the farm, invariably lower labour expenses and increase productivity. Additionally, credit institutions and cooperatives tend to view married farmers as more stable and responsible, which may improve their access to loans and inputs, resulting in increased output and investment

in contemporary agricultural methods (Olagunju & Ajiboye, 2010). Majority (60.33%) have household size of between 11 and 20. In Nigerian rural agricultural homes, the size of the household has a big impact on rice growing. More family labour is usually available in larger households, which is important in rural agricultural systems where mechanization is frequently scarce. Household size is positively correlated with labour availability. On educational status, 16.67% do not have formal education and so may find it difficult to innovate. As revealed further on Table 1, 79.00% of the respondents cultivated between 1 and 8 hectares of land. This is to be expected since the respondents' primary source of income is farming. This result runs counter to that of Afolami et al. (2011), who found that in a comparable study, farmers' average farm size was 1.72 hectares for cooperative members and 1.64 hectares for non-cooperative members. According to the respondents' ownership of rice farms, only 46.33% owns the land others borrowed and rented it. However, renting or borrowing land comes with a lot of difficulties. One significant problem is the absence of tenure stability, which may deter farmers from investing in long-term soil improvement or cutting-edge farming methods. Farmers risk losing the improvements they have made if the landowner decides to reclaim the land. Additionally, the farmer's ability to fully utilize the potential of rented or borrowed property may be hampered by poor maintenance or land-use limitations.

As regards respondents' farming experience, only 13% had less than 20 years farming experience. The implication is that farmers with greater number of years of experience have a thorough understanding of rice farming methods, seasonal fluctuations, insect control, soil management, and other important facets of agricultural operations. They are probably going to make better decisions, which will increase their output and efficiency. These results are consistent with those of Balarabe & Muhammad (2019), who examined the socioeconomic traits of Sokoto State's rice farmers. According to the survey, most of the participants had been producing ice for more than 16 years.

Farmers' Perception on Level of Rice Yield

On farmers' perception on level of rice yield, Table 2 shows that before ABP, majority (88.33%) produced 30 bags and below while 11.67% produced above 30 bags. After the programme, 60.33% produced above 30 bags while only 39.67% produced 30bags and below. These results show that respondents' rice yield rose as a result of the empowerment.

Given that the programme's mean rice productivity values were found to be high, this suggests that the ABP recipient rice farmers in the research region were productive. This means that as the amount of ABP loan secured increases, so will the productivity of the rice producers. This indicates further that respondents' production in the study area was positively and significantly impacted by ABP loan. This outcome is consistent with Salisu et al. (2022), which found that the minimum and maximum values were 1.89 and 14.45, respectively.

Farmers' readiness to embrace the advantages of the Anchor Borrowers' Programme (ABP) and realize its full potential is greatly influenced by their view of the programme's effect on rice yield. Positive perceptions of the programme increase the likelihood that farmers will fully utilize the financial assistance offered, which includes access to inputs like seeds, fertilizer, and contemporary farming technologies. A more proactive attitude to timely farm operations, higher-quality inputs, and a greater adoption of advanced agricultural methods can all result from this impression, and they can all increase

rice productivity. However, farmers may be unwilling to fully participate in the programme if they believe it is useless, difficult to access, or poorly run. Their hesitancy to devote time and money to the programme may lead to less than ideal utilization of the resources available, reducing the potential advantages for raising output. Furthermore, the programme's perceived efficacy affects long-term agricultural development and sustainability by influencing the future widespread adoption of similar programmes.

Table 2: Farmers' Perception on Level of Rice Yield

Output (Bag)	Before ABP		After ABP	
	Frequency	Percentage	Frequency	Percentage
< 10	97	32.33	08	2.67
11 – 30	168	56.00	111	37.00
31 – 50	30	10.00	157	52.33
51 – 70	05	1.67	18	6.00
> 70	00	0.00	06	2.00
Min. Ouput	00		06	
Max. Output	168		157	

Source: Author's fieldwork (2025)

Impact of Irrigated Rice Yield (Income) on Farmers' Welfare

The findings of the stepwise regression analysis on how the income realised from Anchor Borrowers' Programme (ABP) affected farmers' welfare is shown on tables 3a & 3b. Annual yield/income (N) is the dependent variable, and food expenses, labour costs, child education costs, savings and thrifts, farm size, reduction in loan and debt servicing, education level, farmers' age, median income, extension agents, household size, farm experience, land ownership, spouse additions, asset acquisition, and medical expenses were the independent variables.

Table 3a shows that out of the sixteen (16) variables fed into the model, nine (9) variables had a significant effect on the dependent variable. X_2 (amount of labour used) is the best predictor among the factors determining the impact of irrigated rice production on farmers' welfare with a correlation coefficient of 0.931 and coefficient of determination of 0.866. This indicates 86.6% its variance is associated with irrigated rice production on farmers' income and welfare in the study area. Amount of labour directly influences productivity, income and employment. Therefore, increased or more efficient labour used leads to better crop management, higher yields, and improved household income, which are key indicators of welfare.

X_{13} (Land ownership) appears to be the next significant factor with a correlation coefficient of 0.951 and coefficient of determination of 0.904 indicating 90.4% of its variance. This suggests amount of labour and land ownership of farmers together contribute 90.4% of the variation in rice yield in the study area. Land ownership is significant because it provides farmers with security and control over their land thereby encouraging long-term investment in irrigation and improved farming practices. Land owners are more likely to adopt productivity enhancing technologies and access credit, which can increase yields and income. This stability earning potential directly contribute to improved household welfare.

Additionally, X_{16} (Medical bills) is significant in determining the impact of irrigated rice

production on farmers' welfare. It has a correlation value of 0.963 and a coefficient of determination of 0.927, contributed 2.3%. Payment of medical bills reflects the farmer's ability to meet essential health expenses, which is a key indicator of improved living standards. When there is an increase in income from irrigated rice production, farmers are better able to afford healthcare for themselves and their families. This not only improve their well-being but also ensures a healthy workforce, which in turn supports sustained agricultural productivity and log-term welfare

Table 3: Model Summary on Impact of Irrigated Rice Production on Farmer Income and Welfare

Variables	R	R^2	Adjusted Squared	Std. Error	% contribution	Cumulative Percentage	F Change	df1	df2	Sig. F Change
X_2	931	.866	.866	.386.	86.6	86.6	1929.121	1	298	.000
X_{13}	.951	.904	.903	.329	3.7	90.4	115.064	1	297	.000
X_{16}	.963	.927	.926	.287	2.3	92.7	93.588	1	296	.000
X_{11}	.956	.932	.931	.277	0.5	93.2	22.009	1	29	.000
X_9	.968	.938	.937	.265	0.6	93.8	28.875	1	294	.000
X_{12}	.969	.940	.938	.262	0.2	94.0	8.842	1	293	.000
X_6	.970	.942	.940	.258	0.2	94.2	9.557	1	292	.002
X_8	.971	.943	.941	.256	0.1	94.3	4.610	1	291	.033
X_3	.972	.945	.943	.252	0.2	94.5	10.436	1	290	.001

Source: Author's fieldwork (2025)

X_{11} (Household size) determines the impact of irrigated rice production on farmers' welfare has a correlation coefficient of 0.956 and coefficient of determination of 0.932, explains 0.6% of the variation in the effect of rice yield on the welfare of farmers in the research area. Household size affects both labour availability and consumption needs. A larger household can provide more labour for farming activities, potentially increasing productivity and income. Together, labour intensity, land ownership, medical bill payment and household size explain 93.8% of the variation in the effect of rice yield on farmers' welfare in the research area.

Another factor that determines the impact of irrigated rice production on farmers' welfare is median income since it directly reflects the economic benefits gained from farming activities. Higher median income indicates improved earnings from irrigated rice production, allowing farmers to better meet their basic needs, invest in farming inputs, access healthcare and education, and improve their overall standard of living. X_9 (Median income) has a correlation coefficient of 0.968 and coefficient of determination of 0.938, explains 0.2% of the variation in the effect of rice yield on the welfare of farmers in the research region.

X_{12} (Farm experience) is another factor that determines the impact of irrigated rice production on farmers' welfare. It has a correlation coefficient of 0.969 and coefficient of determination of 0.940 with 94.2% of the variance in farmers' welfare in the study area, while farm experience alone contributed 0.2%. Experienced farmers are more likely to have better knowledge of farming practices, irrigation management, and risk reduction strategies. This can lead to higher productivity, better decision-making and more efficient use of resources. Essentially, increased farm experience contributes to improved yields, income, and overall welfare for farming.

X_6 (Reduction in loan/debt servicing) is another factor that determines the impact of

irrigated rice production on farmers' welfare. It has a correlation coefficient of 0.970 and coefficient of determination of 0.942 independently explains 0.1% of the variation in the effect of crop yield on the welfare of farmers in the research region. This means farmers can pay up the loan and debt on time from the income realised from irrigated farming thereby relieving them of the burden of regular loan servicing.

X_8 (Age of Farmers) is another factor that determines the impact of irrigated rice production on farmers' welfare. It has a correlation coefficient of 0.971 and coefficient of determination of 0.943, it independently explains 0.2% of the variance in the impact of rice yield on farmers' welfare. Age can influence a farmer's experience, decision-making and adaptability. Older farmers may have more farming knowledge and experience, which can enhance productivity and income.

Expenses on children's education is significant in determining the impact of irrigated rice production on farmers' welfare because income realized from rice farming enables families to invest more in their children's education. X_3 (Expenses on children education) has a correlation coefficient of 0.972 and coefficient of determination of 0.945 alone accounts for 0.1% of the variance observed in farmers' income on welfare. Investment in children's education improves future opportunities and long-term welfare for the household by breaking the cycle of poverty and promoting social mobility. Therefore, education expenses reflect both current welfare and potential for sustained improvement.

All the nine (9) variables contributed 94.5%. This means that 94.5% of irrigated rice production is influenced by labour force participation, land ownership, medical bill payment, household size and increase in median income, farm experience, reduction in loan/debt servicing, age and expenses on children's education. These results also support those of Tinuke and Joseph's (2018) investigation on how the Anchor Borrower Programme affected the reduction of poverty in Kebbi State's Argungu LGA. According to the study, ABP's assistance to farmers significantly and favourably reduces poverty in the areas of food supply, job creation, and higher living standards. It also generated a sizeable amount of revenue. The results also support those of Balogun et al. (2021), who evaluated the performance of rice farmers in Badagry LGA, Lagos State, Nigeria, who were beneficiaries of the anchor borrowers' programme and those who were not. According to the survey, farmers' beneficiaries made more money than those who did not. The results corroborate the research conducted by Ayinde et al. (2018) to evaluate the impact of the Anchor Borrowers' Programme. The results of the study showed that the Anchor Borrowers' Programme increased the recipients' income. The remaining six variables X_1, X_4, X_5, X_7, X_{10}, X_{14} and X_{15} may not be meaningful or meaningful or didn't make substantial contributions in explaining their variation because their correlation coefficients are too low.

The implication of this is that the more income realised from irrigated farming within a year, the more the ability of farmers to increase the amount of labour used, increase the size of land owned; the more their ability to pay medical bills, the more they can increase their household size, the more their median income, the more farm experience they have; the more their ability to pay back loans/debts, the more the age of farmer in terms of experience, and the more they can take care of their children's education. Hence, there is a positive significant impact of rice yield in terms of income on farmers' welfare.

This supports the conclusions drawn from an examination of the Anchor Borrowers Programme's impact on rice growing in Benue State, Nigeria, conducted by Soom et al. (2023). The multiple regression analysis's findings showed that, at the P≤ 0.01 and P≤ 0.05 levels, farm size had a positive and substantial impact on the productivity of the beneficiary rice farmers, whereas seed and fertilizer had a negative impact.

A farmer's welfare is greatly impacted by the relationship between rice output and number of workers employed, since it guarantees that necessary chores are finished quickly, which helps with timely harvesting and processing, which in turn increases productivity. Increased rice yields allow farmers to make more money, which helps them better control household spending and make investments in the wellbeing of their families (Mamman, 2017).

Age and farm experience also benefit rice farmers' well-being by equipping them with the abilities and know-how needed for effective crop management. Expert farmers are better equipped to make well-informed choices, which maximizes input use and boosts yield. Years of farming experience and effective labour allocation combine to boost farm output, which in turn boosts farming households' median income. Additionally, increased income will assist in loans/debt repayment. Farmers who earn more money can spend it on their children's education, health, and general well-being. A smaller household can lead to better farm resource management and less strain on labour allocation. Hence, work, experience, and financial support all work together to provide a positive feedback loop that raises farmers' welfare and productivity (Ogunlela & Mukhtar, 2019).

The regression equation is given as:

Farmers' welfare = 0.549 + amount of labour used$_{.267}$ *– land ownership*$_{.355}$ *+ payment of medical bill* $_{.858}$ *+ household size*$_{.463}$ *+ increase median income*$_{.456}$ *+ farm experience*$_{.242}$ *+ reduction in loan of debt servicing*$_{.315}$ *+ age of farmer*$_{.175}$ *– expenses on children education*$_{.269}$

Conclusion

This study investigated the sustainability of irrigated rice production among beneficiaries of the Anchor Borrowers' Programme (ABP) in Patigi Local Government Area of Kwara State, Nigeria. The findings demonstrate that the ABP has significantly contributed to increased rice output, by increasing farmers' income, and improved overall wellbeing of participating farmers. Statistical analysis revealed that the ABP accounted for 94.50% of the variation in farmers' income and welfare ($F(10,289) = 499.324$, $p < .001$), underscoring its substantial impact on rural livelihoods. Key socioeconomic factors such as farmers' age, agricultural experience, labour input, capacity to pay medical bills, household size, median income, and level of education were found to positively influence rice production and farmer welfare. These variables suggest that the more experienced, resource-endowed, and better-educated the farmers are, the more they are likely to benefit from the ABP and contribute to sustainable agricultural development. Overall, the study concludes that the Anchor Borrowers' Programme has not only boosted productivity and income among rice farmers in the study area but has also fostered more resilient and sustainable farming households. However, for long-term sustainability, it is recommended that continuous support in terms of extension services, access to quality inputs, and financial literacy training be provided to the farmers to maximize the programme's benefits and

ensure its enduring success in rural agricultural development.

References

Afolami, C. A., Obayelu, A. E., Agbonlahor, M. U., & Lawal-Adebowale, O. A. (2012). Socioeconomic analysis of rice farmers and effects of group formation on rice production in Ekiti and Ogun States of South-West Nigeria. *Journal of Agricultural Science*, *4*(4), 233.

Ayinde O. E., Fatigun O., Ogunbiyi K., Ayinde K. and Ambali, Y. O. (2018). Assessment of Central Bank Intervention on Rice Production in Kwara State, Nigeria: A Case-study of Anchor Borrower's Program. 30th international conference of Agricultural economists. https://ageconsearch.umn.edu/re co.

Badejo B. T. and Adekeye A. J. (2018). The impact of Anchor Borrower Programme on Poverty Alleviation in Argungu Local Government Area of Kebbi State. Journal of Public Administration and Governance.

Balarabe, I.Y., & Muhammed, B.M (2019). Socio-economic characteristics of rice farmers in Sokoto State: A baseline Assessment for Agricultural Projects Intervention. Journal of business and management, 21(9), 13-20.

Balogun O. L., Ayo T. A., Abasilim C. F., Abimbola O. G., Afodu O. J. And Akinwole O. T. (2021). Assessment of the Performance of Anchor Borrowers Programme (ABP) Beneficiary and Non-Beneficiary Rice Farmers in Badagry Local Government Area, Lagos State, Nigeria.

Bommanahalli S. S. B. and Rangappa K. B. (2016). Impact of Contract Farming on the Capital Formation at the Farm Level: An Empirical Investigation in Karnataka. Indian Journal of Applied Research.

CBN, (2015). Statistical Bulletin, December 2015. Retrieved from Featured Article. https://www.cbn.gov.ng/featuredArticle/2015/articles/PresBuharilaunchABP.asp .

Hammond R, & McCullagh P. (1978). Quantitative Techniques in Geography Oxford University Press Limited.

Mamman, R. (2017). The relationship between education, farm experience, and agricultural productivity in Nigeria: A case study of rice farmers in Kano State. *Journal of Agricultural Studies*, 9(1), 35-46.

National Bureau of Statistics (NBS). (2022) https:www.citypopulation.de/en/Nigeria/admin/ NGA024_kwara/

Ogunlela, V. O., & Mukhtar, M. A. (2019). The impact of farm size, mechanization, and input usage on crop yield: A study of rice farmers in Nigeria. *Journal of Agricultural Economics and Development*, 8(2), 50-63.

Olabode, A. D. (2008). Developing Crop Information System for Sustainable Rice Production in Patigi LGA, Kwara State.

Olagunju, F. I., & Ajiboye, A. (2010). Comparative analysis of the use of credit facilities by male and female rice farmers in Oyo State Nigeria. *Journal of Agriculture and Social Sciences*, 6(4), 73–76.

Olushola A. T, Akintunde O. K, Balogun O. L., Jimoh L. O. and Apata M. O (2021). Effects of anchor borrowers' programme on rice production in Irepodun/Ifelodun Local Government Area, Ekiti State. Journal of Life &Physical Science. @www.actasatech.com.

Paul B, Samuel U and Jamal D. M. (2019). Adaptations and challenges for rice production in Nigeria.

Salisu, J., Adebayo, C. O., Jirgi, A. J., & Ojo, A. O. (2022). Effects of Anchor Borrowers Programme (ABP) credit on the productivity of beneficiary rice farmers in Kebbi State, Nigeria. *FUDMA Journal of Agriculture and Agricultural Technology*, *8*(1), 329-338.

Soom, A., Sani, M. H., & Danwanka, H. A. (2023). Effects of Anchor Borrowers' Programme on Rice Farming in Benue State, Nigeria. *Asian Journal of Agricultural Extension, Economics and Sociology*, *41*(5), 143-151.

Tinuke, B. B., & Joseph, A. A. (2018). The impact of anchor borrower programme on poverty alleviation in Argungu local government area of Kebbi state. *Journal of Public Administration and Governance*, *8*(4), 239.