

## **Analysis of Livelihood of Rural Irrigated Crop Farmers in Kano State, Nigeria**

**Abstract.** This study provided an analysis of the livelihoods of rural irrigated crop farmers in Kano State, Nigeria. The study's specific objectives were to; describe the socio-demographic characteristics of the respondents, assess their livelihood assets, household wellbeing, and constraints. The study adopted a multistage sampling technique to collect primary data from 251 respondents drawn from 18 communities in six Local Government Areas of the State. In the analysis of the data, descriptive statistics and the Foster-Greer-Thorbecke poverty measurement were used. The study revealed that irrigated crop farming in the area is male-dominated (78.1%), and the practitioners were mostly small-scale farmers (average farm size of 1.8 ha). In terms of assets, this study revealed that most of the respondents were limited in natural, human, and financial capital. Poverty incidence was about 51%, with the lack of access to formal loans, decline in soil productivity, poor access to market, and lack of access to farm mechanization being prominent challenges of the people. Therefore, there is a need for the government and other key actors in the agriculture and financial sectors to ease farmers' access to credit facilities and agricultural extension services.

**Key words:** livelihood, crop-farmers, Rural, Kano State, Nigeria

**JEL Classification:** Q15, R2

### **Introduction**

The livelihood and well-being of farmers in Nigeria should be among the key considerations of policymakers in the country (Terdoo & Adekola, 2014; Mabel Ukamaka et al., 2017). This is because of the proportion of the nation's populace that undertakes farming as a primary occupation and the role agriculture has been playing in the economy of the country since its inception (Balana et al., 2020; Salami, 2021). Across most developing countries, agricultural development policies have shifted from a focus on boosting food production to environmental issues, poverty reduction, and a variety of livelihood enhancing initiatives (Souvik et al., 2012). Kano State is Nigeria's most populous state, having an estimated population of over eleven million people (National Bureau of Statistics, 2016). The State's history in agriculture and trade has been a phenomenon, currently, the State is second to Lagos in terms of industrialization. However, agriculture has been the source of income and employment for over 75 percent of the rural population (Samuels et al., 2011). The State is among the leading producers of groundnuts, maize, and millet among others. Similarly,

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livestock is raised in large numbers, especially goats, sheep, and cattle, sheep, for both consumption and industrial use.

Over the years, biophysical and socio-economic changes have adversely affected livelihoods in drylands, thereby constraining the economies and well-being of the people in the region (Yahaya et al., 2021). Rural farming households in Kano State have been facing significant food shortfalls and severely restricted livelihood options given the prevailing macroeconomic and environmental factors (Irohibe & Agwu, 2014). Drought is currently the most serious environmental challenge affecting most people's livelihoods, particularly residents of rural areas who rely on rainfed agriculture as the main source of income (Yakubu et al., 2021). To enhance the livelihood of farmers, irrigation schemes were initiated to enable farmers to produce all year round. However, the overall performance of prominent irrigation schemes has not been good. The schemes were characterized by poor maintenance and inefficiencies (Yakubu et al., 2021).

The pressures of daily life, along with the desire to improve living standards for current and future generations, have forced rural communities across developing nations to adopt a variety of ways to cope with life and achieve better livelihood outcomes (Makarfi & Zekeri, 2012; Chen et al., 2018). Analyzing livelihood strategies, assets, and restrictions can help local farmers become more resilient and empowered (Stenwerth et al., 2014 ; Anuga et al., 2015). Therefore, the broad objective of this study was to provide an analysis of the livelihoods of rural crop farmers in Kano State, Nigeria. The study's specific objectives were to; describe the socio-demographic characteristics of the respondents, assess their livelihood assets, household wellbeing, and constraints.

## **Research data and methods**

The study was conducted in Kano State, Northwest Nigeria. It is located between 9° 30' and 10° 33' north latitude and 7° 34' and 9° 25' east longitude of the Greenwich Meridian (Optimum Agricultural Consultants, 2007). The region has a tropical dry-and-wet climate. The dry season lasts from mid-October to mid-May, with mean monthly temperatures ranging from 21° to 23° degrees Celsius and a diurnal range of 12° to 14° degrees Celsius. The state's altitudes range from 500 to 750 meters above sea level. The Guinea savannah receives 600-1200mm of annual rainfall, while the Sudan savannah receives 300-600mm (Irohibe & Agwu, 2014). The state has a landmass of about 20,131km<sup>2</sup> spread across 44 Local Government Areas, with a population of over 11 million inhabitants (National Bureau of Statistics, 2016).

The respondents for the study were chosen using a multistage sampling process. Firstly, Bunkure, Garun Malam, Imawa, Kadawa, and Kura Local Government Areas (LGA) were selected due to their agricultural resources. The second stage involved the selection of 16 communities in the area. In the last stage, 251 rural farming households were selected using a simple random sampling technique. Data for the study were collected with the aid of a semi-structured questionnaire placed on a computer-assisted device (Kobocollect).

In the analysis of the data collected, descriptive statistics were used in describing the respondents' socio-demographic characteristics, livelihood assets, and constraints. Similarly, poverty status which was used as the proxy for well-being was assessed using Foster-Greer-Thorbecke (FGT) model. The FGT model is presented as follows:

$$P_{ai} = \frac{1}{n} \sum_{i=1}^q \left( \frac{z-y}{z} \right)^\alpha$$

where:

$P_{ai}$  = Measure of poverty;

$Z$  = Poverty line;

$y$  = Household's per capital expenditure;

$q$  = Number of rural farming households below the poverty line;

$n$  = Total number of sampled rural farming households;

$\alpha$  = the poverty aversion parameter that takes a value of 0, 1, 2 for incidence, depth, and severity respectively.

The total per capita spending was employed as a measure of the rural farming households' condition of living in the study. The poverty line was \$1.90 USD, which was equivalent to ₦665 based on the Central Bank of Nigeria's official exchange rate at the time. The total expenditure of a household is the summation of all household basic consumption expenses

## Research results

### Socio-Demographic Characteristics of the Respondents

The description of the respondents' socio-demographic characteristics is shown in Table 1. The respondents' age distribution indicated that 13.1% were less than 30 years, 34.3% and 33.5% were in the age range of 30-39 years and 40-49 years respectively. Respondents having 50-59 years and 60 years and above constituted 15.9% and 3.2%. The average age of the respondents was 39.5 years, indicating that the bulk of the respondents are of working age and would be able to engage in farming operations with the required enthusiasm. In terms of gender, the result revealed that 78.1% were males, while 21.9% were females. This suggests that farming in the area is a male-dominated activity. Based on marital status, 89.6% were married, while the divorce, single and widowed were 2.0%, 6.8%, and 1.6% respectively. The respondents' average household size was roughly eleven individuals, reflecting a rather big household size capable of providing family labour for farming activities. According to the distribution of respondents' educational attainment, the majority (60.6%) of respondents had attended formal schools, while 39.4 percent had received no formal education. This demonstrates that the majority of respondents are literate enough to grasp how new technologies can best be used to generate the product if they are exposed to them.

Table 1. Description of the Socio-Demographic Characteristics of the Respondents

Variable	Frequency	Percentage	Mean
<b>Age (Years)</b>			39.5 years
<30	33	13.1	
30-39	86	34.3	
40-49	84	33.5	
50-59	40	15.9	
60 and above	8	3.2	
<b>Gender</b>			
Female	55	21.9	
Male	196	78.1	
<b>Marital Status</b>			
Divorce	5	2.0	
Married	225	89.6	
Single	17	6.8	
Widow	4	1.6	
<b>Household Size</b>			11 People
1-5	18	7.2	
6-10	81	32.3	
11-15	82	32.7	
16-20	42	16.7	
More than 20	28	11.2	
<b>Level of Education</b>			
No formal education	99	39.4	Tertiary
Primary	62	24.7	
Secondary	78	31.1	
Tertiary	12	4.8	

Source: Field survey, 2021.

### Distribution of Livelihood Assets of the Respondents

The adoption of any livelihood strategy depends on assets or capital at the disposal of the individual. According to (Scoones, 1998), these assets are grouped into five key classes, namely; natural, physical, human, financial, and social. The distribution of the respondents' assets is shown in Table 2. Ownership of Irrigation Land and farm size were used as proxies for natural capital (Bedeke et al., 2011). The findings of this study revealed that the majority (93.2%) of the respondents do not own irrigation land. The findings of this study further revealed that most of the respondents were small-scale farmers having an average farm size of 1.82 hectares. This has an implication on farm output and the quality of life of the respondents considering the prominence of farming in the area. Similarly, level of education (Table 1), access to agricultural extension services, and labour availability were used as indicators of human capital. Findings of the study revealed that almost 40% of the respondents lack formal education, and 62.5% had no extension contact. However, agricultural labour is relatively abundant, as most households have five persons aged 14-60 years. In terms of social capital, 63.3% of the respondents were members of Farmer Groups. These groups can provide access to various forms of productive resources if they are viable. With respect to Economic or Financial Capital, access to credit and the nature of sources were used as representations. The study revealed that most (82.9%) of the respondents had

not accessed any credit facility in the period under review. Similarly, among respondents with access to a credit facility, local money lenders were the main source (83.7%), while other sources were Commercial banks, Bank of Agriculture, and NIRSAL. Equally, productive assets were used as proxies for physical capital. The result revealed that 50.0% own motorcycles, 37.1% have a bicycle, while respondents having a tractor, animal traction, water pump, and sprayer constituted 0.4%, 2.4%, 57.7%, and 55.6% respectively. This finding suggests that most of the respondents were limited in natural, human, and financial capital. This can have a negative consequence on livelihood outcomes (Olawepo & Ibrahim, 2013).

Table 2. Distribution of Livelihood Assets of the Respondents

Asset	Frequency	Percentage	Mean
<b>Natural Capital</b>			
<i>Ownership of Irrigation Land</i>			
No	234	93.2	
Yes	17	6.8	
<i>Farm Size</i>			
<2	109	43.4	1.85 hectares
2-4	119	47.4	
>4	23	9.2	
<b>Human Capital</b>			
<i>Extension Contact</i>			
<i>Contact</i>			
No contact	94	37.5	
<i>Agricultural Labour (14-60 years)</i>			
1-5	119	47.4	5 persons
6-10	118	47.0	
>10	14	5.6	
<b>Social Capital</b>			
<i>Membership in Farmer Group</i>			
Member	159	63.3	
Non-member	92	36.7	
<b>Economic or Financial Capital</b>			
<i>Access to Credit</i>			
Access	43	17.1	
No access	208	82.9	
<i>Sources of Credit</i>			
Commercial banks	3	7.0	
Bank of Agriculture	2	4.7	
NIRSAL	2	4.7	
Local money lenders	36	83.7	
<b>Physical Capital</b>			
Motorcycle	124	50.0	
Bicycle	92	37.1	
Tractor	1	0.4	
Animal traction	6	2.4	
Water pump	143	57.7	
Sprayer	138	55.6	
Other Farm equipment	144	58.1	

Source: Field survey, 2021.

### Respondents' Household Wellbeing

The respondents' household well-being was assessed using household poverty status as shown in Table 3. This is because poverty status is an outcome of the livelihood of households, and can substantially depict wellbeing. The finding of the study indicated that the poverty incidence in the area was 50.6%, which is relatively high. This means that at the time of the survey, poverty in the area greatly surpassed the national average. This conclusion supports the findings of OPHI (2020) and Babatunde et al. (2019), which reported a high rate of poverty in the area.

Table 3. Distribution of the Respondents' Poverty Status

Status	Frequency	Percentage
Poor	127	50.6
Non-Poor	124	49.4
Total	251	100.0

Source: Field survey, 2021.

### Distribution of Livelihood Constraints

As indicated in Table 4, respondents of the study have encountered a number of issues that limit their ability to engage in a variety of livelihood activities in order to improve their well-being. Findings of the study reported that the most prominent challenges of the people were the lack of access to formal loans (73.6%), the decline in soil productivity (73.6%), poor access to market (72.8%), and lack of access to farm mechanization (60.8%). Other challenges include climate change due to high temperature and drought (59.2%), unavailable skilled labour supply (48.8%), high tax rate on the water for irrigation (15.6%), and gender issues (11.6%). This has resulted in a negative slide in soil degradation with significant economic consequences (Yahaya et al., 2021). Therefore, assisting rural irrigation crop farmers to overcome these challenges can positively impact households and the economy of the state.

Table 4. Distribution of Livelihood Constraints of the Respondents.

Constraint	Frequency*	Percentage
Lack of access to formal loan	184	73.6
Poor access to market	182	72.8
Unavailable skilled labour supply	122	48.8
A decline in soil productivity	184	73.6
Climate change (high temperature and drought)	148	59.2
Gender issues	29	11.6
The high tax rate on the water for irrigation	39	15.6
Lack of access to farm mechanization	152	60.8

\* multiple responses.

Source: Field survey, 2021.

## Conclusions

This study has shown how the livelihood of irrigated crop farmers is reliant on agriculture. Similarly, the study established that the respondents lack adequate access to natural, human and financial capital. This has negatively affected household wellbeing, as the majority were poor. Also, prominent challenges of the people were the lack of access to formal loans, decline in soil productivity, poor access to the market, and lack of access to farm mechanization. Hence, there is a need for the government and other key actors in agriculture and financial sectors to ease access to credit by the farmers. Furthermore, agricultural extension services access should be enhanced by recruiting more personnel, motivation, and using of wide range of media to reach farmers.

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