



## ANALYSIS OF POVERTY STATUS AND COPING STRATEGIES AMONG SMALL SCALE IRISH POTATO FARMERS IN PLATEAU STATE, NIGERIA

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### ABSTRACT

*The study analyzed poverty status and coping strategies among small-scale Irish potato farmers in Plateau State, Nigeria. A sample size of 301 respondents was randomly selected from three Local Government Areas for the study. A structured questionnaire was used to collect data for the study. Descriptive and inferential statistical tools were employed to achieve the study's objectives. The study revealed that in Irish potato farmers in the study location, according to the poverty line, a larger percentage (36.5%) of the Irish potato farming households were poor, with a 2.7% poverty gap. Different coping strategies adopted by the Irish potato farmer show a significant impact on the farmer's poverty status, such as planting Irish potatoes with other crops ( $\beta = -0.144$ ), farmers engaged in any form of irrigation farming ( $\beta = -.269$ ), member of household migrate to a different location ( $\beta = -0.134$ ), adjust food intake due to the risks encountered ( $\beta = -0.206$ ), Irish potato farmers borrow money to cope with the challenges faced ( $\beta = -0.165$ ). However, based on the poverty line, a significant percentage of the Irish potato farming households were poor, and different coping strategies adopted by the farmers have yielded a tangible improvement in the poverty status of the farmers whose primary sources of income are from Irish potato farming. Therefore, to improve the coping strategy of the Irish potato farmers further, there would be a need for programs that strengthen them with practices that reduce their risk exposure.*

**Keywords:** *Poverty Status, Coping Strategy, Irish Potato, Potato Farmers*

### INTRODUCTION

Poverty has remained a threat and challenge to humanity in all ramifications. It is complex, multidimensional and multifaceted, with manifestations in the economic, social, political, environmental and every realm of human existence. The conceptualization of poverty over the years has changed with emerging perspectives in different contexts (Bhalla & Lapeyre, 2016). In sub-Saharan Africa, the incidence of extreme poverty has increased in recent years; the incidence of poverty is projected at over 45 per cent, essentially unchanged from 1990.

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In Nigeria, the problem of poverty is a longstanding one. Approximately 74 % of the rural population in Nigeria is described as poor and comprised predominantly of resource-poor farmers. They cultivate an average of about two hectares of land, usually on scattered holdings with low and declining productivity (NBS, 2012).

A recent poverty assessment survey in Nigeria has shown that over 70% of the population is living on less than a dollar per day, and over 50% are living below the national poverty line. The survey also revealed that poverty is especially higher in rural areas where most of the population resides and derives their livelihoods from agriculture (World Bank, 2018). The challenges of poverty in Nigeria have attracted the attention of successive administrations. However, poverty remains amid plenty and rises in periods of economic growth (Omoyibo, 2013). This may be true because Nigeria is endowed with human and natural resources and has had an increasing national income. Yet, a larger section of her population languishes in poverty due to uneven distribution and allocation of income and wealth (Dauda, 2016). With this condition, Nigeria should rank among the richest countries in the world and should have no business with extreme poverty.

Irish potato is by far the most efficient tuber crop in Nigeria in terms of tuber yield and days of maturity. Thus, because of the short maturity period of the crop, it is produced almost throughout the year, making it the highest-yielding tuber crop in Nigeria (Zemba, Sitta, Adebayo, and Jinga, 2013). Although Nigeria is known to be the fourth largest producer of potatoes in sub-Saharan Africa, it is the seventh biggest potato producer in Africa. The main potato growing area in Nigeria is Plateau State, where altitudes range from 1200 to 1400 meters and summer temperatures rarely exceeding 35°C make for a temperate climate well suited for potato production (Ugonna, Jolaoso, & Onwualu, 2015).

According to FAO STAT (2015), Irish potatoes ranked fourth in the World as a food crop after maize, rice and wheat. In Nigeria, the Irish potato has recently been identified as one of the most important crops to alleviate hunger in the world, which is additionally recognized to be the fourth most significant root crop, after cassava, yam and cocoyam. Irish potato is grown for food and cash crops because there is an economically high expected value per hectare. Potatoes are a crop of major economic significance worldwide. The crop provides a reliable source of income, employment and food for many populations in developing countries (FAO, 2011). However, due to the susceptibility of potatoes to pests, diseases, moisture loss and extremes in weather, their yield is more variable than those of many other crops. This yield variation, price fluctuation, and high input costs make potato production risky. Due to these problems, only some farmers specialize in sole potato production; most grow potatoes with other crops (NRCRI, 2012).

Therefore, agriculture is critical to achieving global poverty reduction targets and it is still the single most important productive sector in most low-income countries and for agriculture to drive development and consequently reduce poverty in developing countries, challenges bordering on effective coping strategies of smallholders to economic shocks should have to be tackled (FAO, 2011). Given the devastating effect of poverty and the need to analyze the poverty status of Irish potato farming households, identify the coping strategies adopted by farmers and determine the impact of these coping strategies on the Poverty Status of Irish Potato Farmers.

## METHODOLOGY

### Study Area

The study was conducted in Plateau state, the state comprises of 17 LGAs with a total population of 3.5 million people (NPC, 2006). This study covers three LGAs, Bokkos, Jos South and Barkin-Ladi Local Government Areas (LGAs) of Plateau State. The respondents were purposefully selected under multi stage sampling technique, the choice of these LGAs was on the basis that they were the major potato producers and were reported to have the largest output in the state. The state accounts for over 75% of the total potato produced in Nigeria.

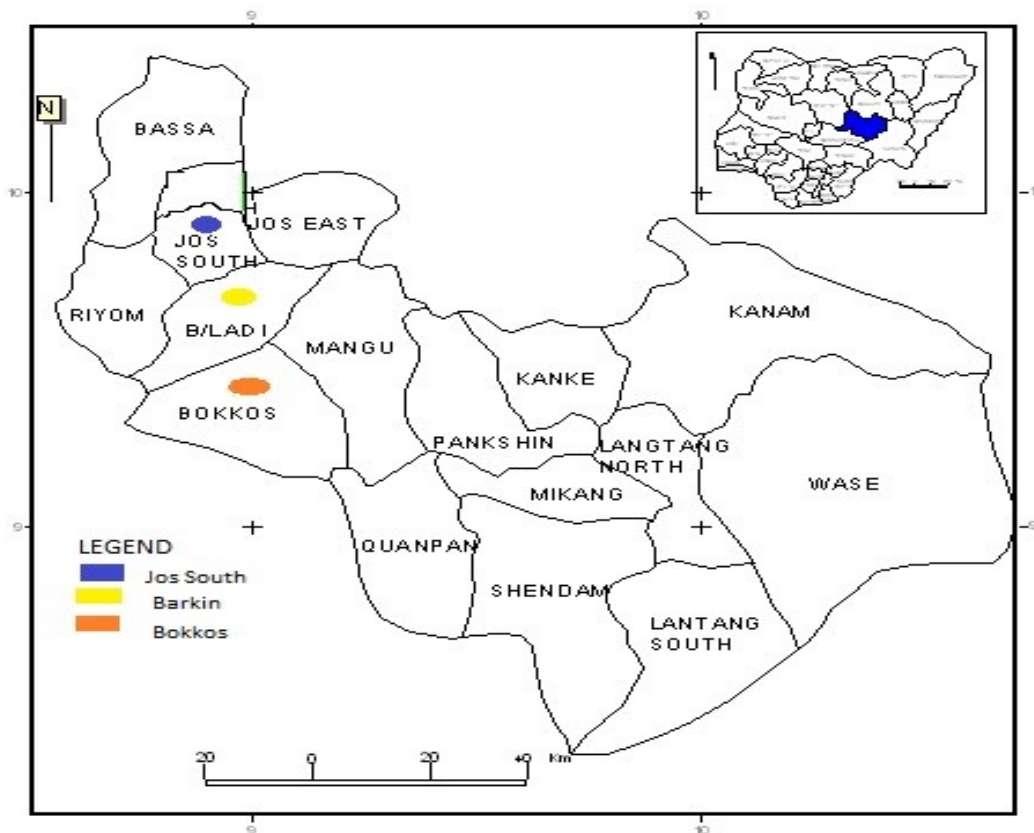


Figure 1: Map of the Study Area

**Sampling Technique and Sample Size**

A multi-stage sampling technique was employed to select the respondents. In the first stage, purposive selection of 3 LGAs out of 17 LGAs; Jos-South, Bokkos, and Barkin-Ladi LGAs was made based on the fact that they are the prominent Irish potato-producing areas in Plateau State (Jwanya *et al.*,2015). In the second stage, all the communities in the three selected LGAs are listed in a Microsoft excel sheet and (random command) was used to randomly select nine villages with three communities each from the three LGAs. This leads to the selection of 3 communities from Barkin-Ladi LGA, 3 from Jos-South LGA and 3 from Bokkos LGA. Sample frame for each of the selected communities was adopted from PADP office record for Irish potato farmers in Plateau state. The data were collected during the 2018 cropping season after harvesting. In the third stage, an online calculator (raosoft.com) was used to determine the expected sample size from the total population where 301 respondents at 95% significance level were selected. Structured questionnaires were administered by trained enumerators in the languages spoken by the respondents.

**Data Analysis**

**Descriptive Statistics:** Descriptive statistics, such as frequency distributions, percentages, and means, were used to describe the socio-economic characteristics and coping strategies of the Irish potato farmers.

**Foster-Greer-Thorbecke (FGT) Poverty Model:** Foster, Greer and Thorbecke (1984) model was adapted to measure poverty status among Irish potato farmers. The model is specified as:

$$P\alpha(y,z) = \frac{1}{n} \sum_{i=1}^{\alpha} \left[ \frac{z - y_i}{z} \right]^{\alpha} \dots\dots\dots (1)$$

Where:

$P\alpha$  = Poverty parameter index

$P_0$  =Headcount,  $P_1$ = poverty gap,  $P_2$ = poverty severity

$n$  = Total number of small-scale Irish potato farmers in the study area

$q$  = Number of Irish potato farmers below the poverty line ( $z$ )

$z$  = Poverty line  $\frac{2}{3}$  of the mean annual per capita income of the Irish potato farmers

$y_1$  = Household income (₦)

**Logit Regression Model:** This was used to determine the effects of coping strategies on poverty status of Irish potato farmers. The empirical model is specified as follows;

$$Y_i = \beta_0 X_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \beta_5 X_5 + \beta_6 X_6 + \beta_7 X_7 + \beta_8 X_8 + \beta_9 X_9 + e_i \dots\dots\dots (2)$$

Where:

- $Y_i$  = Poverty status (1 = poor and 0 = non-poor)
- $X_1$  = Sell assets to solve some of my problems (Sell =1, not sell = 2)
- $X_2$  = Planting of Irish potatoes along with other crops (Planting =1, not planting 0)
- $X_3$  = Engaged in Irrigation farming (Engaged = 1, Not engaged = 0)
- $X_4$  = Household members migrate for better means of livelihood (Migrate =1, not migrate = 0)
- $X_5$  = Used savings to address risk faced (Used = 1, Not used =0)
- $X_6$  = Engaged in off farm activities (Engaged =1, Not engaged =0)
- $X_7$  = Adjust food intake due to risk faced (Adjust =1, Not Adjust =0)
- $X_8$  = Borrowed money to cope with challenges faced (Borrowed = 1, Not Borrowed =0)
- $e_i$  = Stochastic error term which is assumed to be normally distributed

**RESULTS AND DISCUSSION**

**The Poverty Status among Small-Scale Irish Potato Farmers’ Household**

The result showed the poverty status of Irish potato farmers in the study location. This measures the depth of poverty of the Irish potato farmers.

Table 1: Distribution of the respondents according to poverty level and measures

Poverty Indices	Measures	Percentage (%)
Poor	110	36.5
Non-poor	191	63.5
Poverty indices (Po)	0.36	36.5
Poverty gap (P1)	0.166	16.6
Poverty Severity (P2)	0.0275	2.7
Poverty Line	₦ 381	
Average income	₦ 208706.9	

**Source: Field Survey, 2024**

The result in Table 1 shows the mean income of the farming household head which was ₦208,706.9. The value of poverty line computed was ₦139,137.9 per annum and 381 per day (i.e.,2/3 of 208,706.9). Thus, the farming household heads that earn less than the value of poverty line were considered poor, which is about 36.5 per cent of the sampled household heads, while those that earn greater than or equal to the value of the poverty line, were considered to be non-poor, which is 63.5 per cent of the sampled household heads. The incidence of poverty (P0) in this study was 0.36 indicating that 36 percent of the sampled farming household

heads were poor based on the poverty line. P1 (poverty gap) among the farming households was 0.16, implying that an average poor farming household would require 16 percent of the poverty line to get out of poverty. The value P2 (poverty severity) was 0.0275, indicating that the poverty severity of poor farming households was 2.7 percent (Table 1). This result means that farmers need about 2.7 percent increases in per capita income to push them away from severe poverty.

Poverty is likely to affect the capacity of farm households to access better health and education facilities, purchase input at the proper time, acquire other farm assets and resources, and adopt new technologies. The low level of these factors, in turn, adversely affects agricultural productivity. Thus, poverty is both an effect and a cause of low farm productivity. A study by Ezeh, Omokore, and Eze (2019) identified some farming households bedevilled with poverty in Southern Kaduna, Nigeria.

### Coping Strategies Adopted by Irish Potato Farmers

Farm households have developed various mechanisms for coping with various challenges. These strategies generally reduce the adverse effect of poverty on their households.

**Table 2: Coping Strategies Adopted by Irish Potato Farmers**

Coping Strategies	Frequency	Percentage	Rank
Engage in off/non-farm activities	301	100.0	1 <sup>st</sup>
Use savings to address challenges	283	94.0	2 <sup>nd</sup>
Plant Irish potato with other crops	257	85.4	3 <sup>rd</sup>
Adjust food intake	213	70.8	4 <sup>th</sup>
Engage in irrigation farming	195	64.8	5 <sup>th</sup>
Migration of household members	158	52.5	6 <sup>th</sup>
Borrow money	145	48.2	7 <sup>th</sup>
Sell some assets	100	33.2	8 <sup>th</sup>
Withdraw children from school	94	31.2	9 <sup>th</sup>

\* Multiple responses were allowed

**Source: Field Survey, 2024**

The result in Table 2 reveals that, the 3 top coping strategies adopted by the Irish potato farmers are engaging in off/non-farm activities (100%), use savings to address challenges (94%) and Plant Irish potato with other crops (85.4%). Other coping strategies were farmers adjusting their food intake (70.8%), engaging in irrigation farming (64.8%) and migration of farming household members (52.5%). The result is comparable with those of Salimonu and Falusi (2009) and Korir (2011), who reported that farmers used similar coping strategies in supporting their households.

## Effect of Coping Strategies on Poverty Status of Irish Potato Farmers

Irish potato farmers in the study area managed risk by implementing practices that would reduce their exposure to risk. The *a priori* expectation of the regression was to have negative relationship between the coping strategies and poverty status of the Irish potato farmers' household.

Table 3: Effect of Coping Strategies on Poverty Status of Irish Potato Farmers

Variables	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
(Constant)	2.477	.257		9.635	.000
Sell some assets	-.106	.056	-.103	-1.884	.061
Plant Irish potato with other crops	-.144	.072	-.108	-2.009	.045*
Engage in irrigation farming	-.269	.054	-.267	-4.978	.000***
Migration of Household members	-.134	.052	-.139	-2.583	.010*
Use savings to address risks	-.207	.110	-.102	-1.875	.062
Adjust food intake	-.206	.057	-.194	-3.582	.000***
Borrow money	-.165	.052	-.171	-3.161	.002**

Dependent Variable: Poverty status of the Household head, \*\*\*p-value 1%, \*\*p-value 5%, \*p-value 10%.

**Source: Field Survey, 2024**

The results presented in Table 3 revealed that there is a significant relationship between coping strategies and the poverty status of the Irish Potato farmers. The  $R^2$  value was 0.42 and implied that 42 percent of the variation that occurred in the poverty status of the Irish potatoes' farmers could be explained by the coping strategies adopted among the Irish potato farmers. The coefficient obtained for "Engage in any form of irrigation farming" among Irish potato farmers (-0.269) was negative and significant at 1% percent level of probability. This implied that as this coping strategies adopted increases, the poverty status of the Irish potato farmers reduces. This result is consistent with the findings of Beyena (2008) for Ethiopian farmers and of Babatunde and Qaim (2013) in their separate studies. Also, the coefficient obtained for "Adjust your food intake due to the risks encountered" among Irish potato farmers (-0.206) was negative and significant at 1% of probability. This implied that as this coping strategies adopted increases, the poverty status of the Irish potato farmers reduces.

The coefficient obtained for "Irish potato farmers borrow money in order to cope with the challenges faced" among Irish potato farmers (-0.165) was negative and significant at 5 percent of probability. This implied that as this coping strategies adopted increases, the poverty status of the Irish potato farmers reduces. This



implies that there is significant negative relationship between poverty levels of Irish potato farmers and coping strategies adopted in mitigating the effects on their households. The result is comparable with those of Salimonu and Falusi (2009) and Korir (2011), who reported that farmers who sell liquid assets as a means of managing risk slightly cushion the effect of poverty on their household.

Furthermore, the coefficient obtained for “Irish potato farmers or any member of their household migrate to a different location in search of a source of livelihood” among Irish potato farmers (-0.134) was negative and significant at 5 percent level of probability. This implied that as this coping strategies adopted increases, the poverty status of the Irish potato farmers reduces. The coefficient obtained for “Irish potato farmers plant their Irish potato with other crops on the same plot” among Irish potato farmers (-0.144) was negative and significant at 5 percent of probability. This implied that as this coping strategies adopted increases, the poverty status of the Irish potato farmers reduces. This result is similar to that of Abdelhak, Jamalludin and Saidatulakmal (2012), who found that there exists a negative relationship between poverty and households ‘coping strategies.

## CONCLUSION

The study concluded that a significant percentage of Irish potato farming households were poor. In response to the various farming challenges faced by potato farmers, they adopt different coping strategies, such as planting Irish potatoes with other crops and engaging in off- and non-farm activities. Adopting these strategies has significantly impacted Irish potato farmers' poverty status.

## RECOMMENDATIONS

1. To reduce the level of poverty among Irish potato farming households, research institutes should develop programs that emphasize aids in the form of trades to farmers, promoting rural households to participate more in off-farm livelihood activities beyond Irish potato farming to diversify their income.
2. The coping strategies adopted by the farmers had significant impacts on their poverty levels. Therefore, more programs should strengthen the Irish potato farmers' practices and continue to help farming households reduce their risk exposure.

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