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ANALYSIS OF IMPROVED AND LOCAL GROUNDNUT PRODUCTION FOR THE BENEFIT OF SMALLHOLDER FARMERS IN KANO, KATSINA AND JIGAWA STATES, NIGERIA

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Abstract

Groundnut (Arachishypogaea L.) is an important source of edible oil with oil content ranged between 48-50% depending on the varieties, protein ranged between 26-28% while carbohydrate, minerals and vitamin is between 11-27% making the crop as an important diet component. This study focused on the profitability of improved and local groundnut production among smallholder groundnut producers in Kano, Katsina and Jigawa states, Nigeria. The study area was divided into an Upscaling Project Area (UPA), where Groundnut Improved Production Practices (GIPP) was introduced and Non Project Area (NPA) where GIPP was not introduced. Multi-stage sampling techniques consisting of purposive and random sampling were used to select a total of 224, (112 from UPA and 112 from NPA) smallholder groundnut producers. Primary data used for the study were collected with the aid of a structured questionnaire. Gross Margin and chi square were used for data analysis. The findings revealed that, the cost of farm labour was the most important cost accounting for 52% in UPA and 40% in NPA. The pooled result revealed a gross profit margin of ₦60,136.22 and ₦18,256.00 in UPA and NPA respectively. The returns per Naira invested in the UPA and NPA were 0.91 and 0.37, respectively showing more return to Naira invested in the UPA compared to NPA. The computed Pearson Chi-Square revealed that, there is significant difference in the gross income of groundnut producers in the UPAs and NPAs. The study recommends that, Regular training to producers on up taking and adoption of GIPP would help increase their level of profitability and cash income. The findings may be of help to the groundnut producers, policy makers, NGOs and other stakeholders.

Keywords: Groundnut, UPA, NPA, GIPP, Gross Margin

1. Introduction

Different reports show that, despite continuous and repetitive efforts to improving Groundnut's (*Arachis hypogaea* L.) productivity among smallholder producers, the yield still remained below global averages of between 1.7 and over 3 t/ha. There have been fluctuations in the production output of the crop since 1960. For instance, groundnut output decreased from1, 565,000 tons in 1961 to 611,000 tons in 1985 representing about 39% decrease and during the period, the yields declined by 3.3% annually. However, groundnut output witnessed an increasing trend between 2000 and 2009 at 2.6% annual rate (FAO, 2012). The production reached 2,636,230 tons in 2010 as reported by FAOSTAT, 2015 which is estimated at about 2.9% (NAERLS, 2010). Production declined in 2011 and increased in 2012 at a rate of 0.42%, the yield also decreased in 2013. Similarly, a production increase to 3,399,158 metric tons, 3,467,446 metric tons and 3,581,800 metric tons was reported in 2014, 2015 and 2016 respectively. But production declined to 2,420,000 metric tons, 2,886,987 metric tons and 2,824,069 metric tons in 2017, 2018 and 2019 respectively compared to 2016 (FAO, 2019). Several efforts have been made through developing high yielding different seed varieties to improve the productivity. The recent developed varieties, registered and released for commercial

purpose in Nigeria are SAMNUT 24, SAMNUT 25 and SAMNUT 26 (National Centre for Genetic Resources and Biotechnology, 2014). The estimated pod yields of these varieties is 2-2.5 tons/ha instead of less than 1 ton/ha; the haulm yields is estimated at between 2.5-3tons/ha; the maturity period is between 80-90 days which is lower compared to other varieties which generally mature at about 120 days; The oil contents is at least 45% when processed, moderately resist attack of notably early and late leaf spot diseases and rosette virus (Echekwu et al., 2012). This and other several efforts are being made with view to improving productivity which could have a multiplier effects on increasing profitability and cash income of the producers which in turn could have a positive impact on food security and standard of living. This motivated the survey to determine and compare the profitability of improved and local groundnut variety for the benefit of smallholder farmers in the survey area. The objectives of the survey are to;

i. determine the profitability of improved and local varieties groundnut production in the survey area;

ii. compare the profitability of improved and local groundnut varieties production.

2. Literature Review

Groundnut (*Arachis hypogaea* L.) is an essential tropical legume oil seed crop grown for oil production, human consumption and animal feed. It is a source of cash income and food to producers and to consumers; it constitutes an important diets component for both rural and urban population. It contains oil between 48-50% depending on the variety, 26-28% protein and 11-27 % carbohydrate. The crop is placed the fourth most important source of edible oil and third most important source of vegetable protein oil globally (Rai., Charak., and Bharat 2016). The total production of groundnut globally is estimated at 50,321,000 tons, (IPAD, 2022), grown on 26.5 million hectares worldwide (Sushma, Narendra, Anushree, Ekta, Sasode, Sikarwar, Tomar, Tripathi, Kandalkar & Singh, 2018) with an average productivity of 1.4 tons/ha, and 95% of the global production occurred in developing countries (Food and Agriculture Organisation (FAO, 2011)).

The crop has number of benefits to smallholder farmers. It is a source of cash income; it fixes atmospheric nitrogen into the soil which may lower the cost of fertilizer in associate crops. This is essential when considered the rising prices for chemical fertilizers which make it difficult for smallholder farmers to acquire (Simtowe, Asfaw, Diagne, and Shiferaw, 2008). The groundnut production is concentrated in Asia and Africa, where the crop is grown mostly by smallholder farmers driven by rain-fed conditions with insufficient production inputs (Ibrahim, Ayinde, Dauda and Mukhtar, 2012). The crop is presently grown in all agro-ecological zones in Nigeria. (National Agricultural Extension Research and Liaison Services (NAERLS), 2011)).

In 2022, Nigeria groundnut production is put at 4,500,000 Metric Tons which place the country the third largest producer after China and India with production of 18,300,000 and 6,650,000 Metric tons respectively (IPAD, 2022). 55% of the groundnuts produced in Nigeria are in association with other crops like maize, cassava, millet or sorghum.

Profitability Analysis

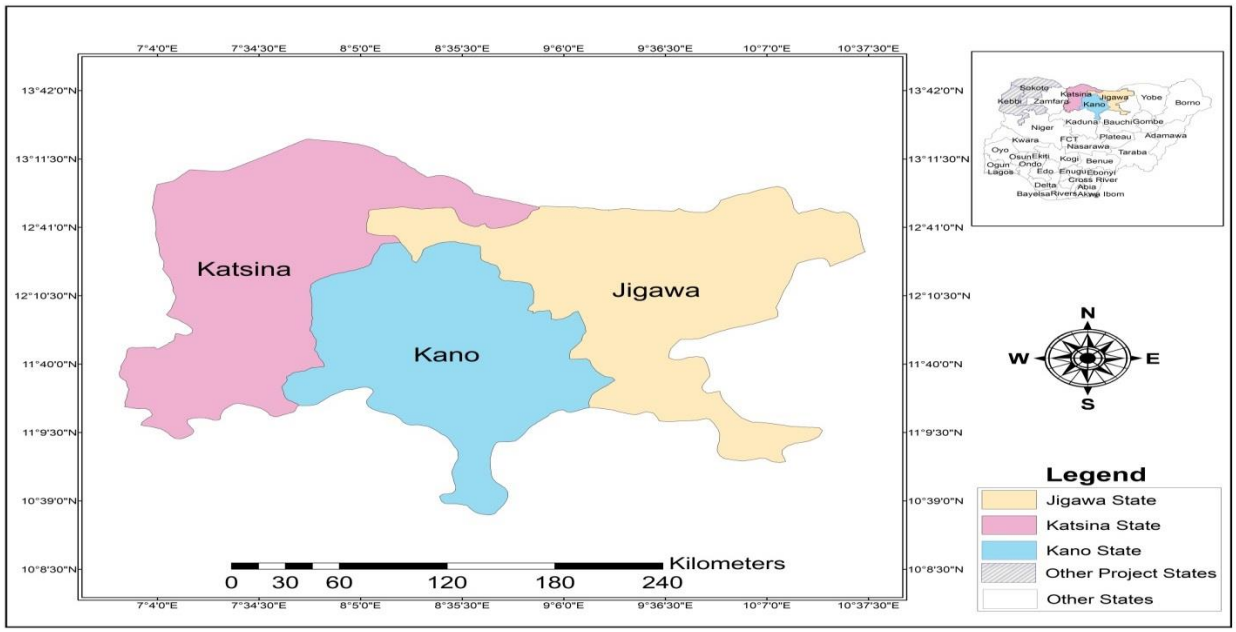
Profitability analysis is a common tool used by many managers of different enterprises to make decisions on whether to participate in the enterprise or not. Many studies have been conducted on the profitability of different enterprises. In agriculture profitability analysis were carried out on different crops and livestock enterprises. Tererai, Emmanuel Benjamin, Munashe and Tafirei (2017) conducted a study on the viability and profitability of groundnut production by smallholder farmers. A gross margin was used to compute the gross rate of return (GRR), and found to be 0.45. Proxing for fixed costs, net profit was computed and a net rate of return (NRR) of 0.31 was found.

Ibrahim *et al.* (2015) conducted field trials at the Teaching and Research farm of Samaru College of Agriculture, Ahmadu Bello University Zaria during the 2012 and 2013 cropping seasons. The treatments consisted of three levels of poultry manure (0, 1.5 and 3 tonnes/ha) and three varieties of groundnut (SAMNUT 11, SAMNUT 22 and SAMNUT 23). The yield data were subjected to economic analysis using the gross margin and the cost benefit analysis. The yield data obtained from the trials showed that

application of 1.5 tonnes/ha resulted to highest pod yield (2,709 kg/ha, 2,425 kg/ha and 2,537 kg/ha in 2012, 2013 and the combined which translates to higher gross margin of ₦241,405, ₦217,925 and ₦226,659 in 2012, 2013 and combined respectively).

The study area is divided into an Upscaling Project Area (UPA) where Groundnut Improved Production Practices (GIPP) was introduced and Non Project Area (NPA) where GIPP was not introduced. Figure 1 is the map of the study area.

3. Methodology



Source: Sadiq, 2019

Figure 1: Map of Nigeria Showing the Study Area

A combination of purposive and multi stage sampling techniques were used for the study. Three (3) out of the five (5) States where the GIPP is being introduced were purposely selected based on the proximity and familiarity of the areas by the researcher, time constraints and are among the States where groundnut Up-scaling project was introduced. The 20 LGAs that participated in the Up-scaling project in the three States were purposely retained for the survey, while a similar number of LGAs in the NPA was randomly selected making a total of 40 LGAs. This resulted in a total of 14 LGAs in Kano, 14 LGAs Jigawa and 12 LGAs in Katsina. A total number of 112 groundnut producers that participated in the Up-scaling project were selected with 32 in Kano, 44 in Jigawa and 36 in Katsina States. Also, a total of 112 non-participating producers were randomly selected, 32, 44 and 36 in Kano, Jigawa and Katsina States respectively. Table 1 summarises the sampling procedure in both UPA and NPA.

Table 1: Summary of Sampling

	UPA		NPA	
States		Number of groundnut producers		Number of groundnut producers
Kano	Tofa	5	Bagwai	5
	Kabo	3	Minjibir	3
	Garko	6	Kibiya	6
	Shanono	4	Wudil	4
	Bebeji	5	Bunkure	5

	Dawakin kudu	4	Gwarzo	4
	Bichi	5	Gezawa	5
Sub-total		32		32
Jigawa	Kazaure	7	Kaugama	7
	Taura	5	Malam Madori	5
	Kiyawa	9	Birnin Kudu	9
	Gagarawa	9	Dutse	9
	Babura	4	Buji	4
	Gumel	5	Ringim	5
	Maigatari	5	Jahun	5
Sub-total		44		44
Katsina	Kankia	7	Jibiya	7
	Mashi	7	Daura	7
	Dutsin-Ma	8	Sandamu	8
	Safana	5	Kurfi	5
	Zango	5	Rimi	5
	Musawa	4	Batagarawa	4
Sub-total		36		36
Total		112		112

Source: Field survey, 2018, 2019 UPA=Up-scaling Project Area, NPA=Non Project Area

Primary data used for the study were collected with the aid of a structured questionnaire administered to selected smallholder groundnut producers in the targeted LGAs based on 2019 and 2019 cropping season. Data collected were analysed using Gross Margin Analysis (GMA) and Chi square (X^2). GMA was used to calculate the profitability of groundnut production in both the UPA and NPAs. Statistical Package for Social Science (SPSS 20) was used for the data analysis.

The GM model is express as:

$$GM=\Sigma Q_iP_i - \Sigma Q_jP_j \quad (1)$$

Where;
GM = Gross Margin,
Σ = Sum of,
Q_i = Quantity of output i (ha),
P_i = Unit price of output (Naira),
P_j = Unit cost of variable input of j (Naira),
Q_j = Quantity of variable input of j (ha)
ΣQ_iP_i Represents Total Revenue (TR) and ΣQ_jP_j Represents Total Cost (TC)

Chi-square test compares proportions actually observed in a study with the expected to establish if they are significantly different. It was used to determine if there is difference in the GM of groundnut producers in the UPAs and NPAs. Symbolically, the chi square can be expressed as follows;

$$X^2 = \frac{\Sigma (o - e)^2}{e} \quad (2)$$

where;
X^2 = Chi square.
Σ = Summation
o = Observed
e = Expected

4. Results and Discussion

4.1 Socio-economic Characteristics of the Groundnut Producers

The socio-economic characteristics of the groundnut producers in both UPA and NPA are summarised in Table 2a and 2b. Based on the pooled results, most of the producers, about 88% and 92% in UPA and NPA respectively were men and more producers in the UPA 40% completed primary education compared to the NPA 26%. Though few producers attained higher education, Katsina has more 3.57% compared to Kano and Jigawa with 1.79% and 0.89%, respectively. However, majority of groundnut producers 61.61% in UPA have no formal education compared to 38.24% in the NPA. 73.21% of groundnut producers in UPA belong to farmers' cooperative while only 25.89% are members of cooperative in NPA. This revealed that the UPA has more members belonging to one farmers' cooperative or the other. 48.21% and 55.36% of the producers in UPA and NPA respectively, purchased their land while 40.18% and 13.39% acquired their land through inheritance in UPA and NPA respectively.

Table 2b reported that, in the UPA, 25 years was the minimum age, 71 was the maximum and the mean age was 48 years. While in the NPA, the minimum age was 19, the maximum was 74, and the mean age was 41 years. The pooled result revealed that, a minimum household size in UPA was 3, the maximum was 36, and the mean was 16. While in the NPA, the minimum household size was 4, the maximum was 36 and the mean was 17. The minimum, maximum and the mean farm size in UPA were 0.5ha, 3.5ha and 1.81ha respectively. While in NPA it was reported that, 0.5ha, 3.75ha and 1.79ha were the minimum, maximum and mean farm size respectively. The overall result showed similarities in the socio-economic characteristics of the groundnut producers in the UPA and NPA.

Table 2a: Sex, Educational Status, Cooperative Membership and Land Ownership of Groundnut Producers

Variable	Kano		Katsina		Jigawa		Pooled Results	
	UPA	NPA	UPA	NPA	UPA	NPA	UPA	NPA
	F(%)	F(%)	F(%)	F(%)	F(%)	F(%)	F(%)	F(%)
SEX								
Female	6(5.36)	4(3.57)	6(5.36)	3(2.68)	2(1.79)	1(0.89)	14(12.50)	8(7.14)
Male	26(23.21)	28(25.00)	30(26.79)	33(29.46)	42(37.50)	43(38.39)	98(87.50)	104(92.86)
EDUCATIONAL STATUS								
Non-formal education	13(11.61)	23(20.54)	7(6.25)	18(16.07)	19(16.96)	28(25.00)	39(34.82)	69(61.61)
Primary education	19(16.96)	11(9.82)	14(12.50)	14(12.50)	8(7.14)	4(3.57)	41(36.61)	29(25.89)
Secondary education	7(6.25)	3(2.68)	5(4.46)	4(3.57)	4(3.57)	5(4.46)	16(14.29)	12(10.71)
Tertiary education	2(1.79)	1(0.89)	4(3.57)			1(0.89)	6(5.36)	2(1.79)
COOPERATIVE MEMBERSHIP								
Member	32(28.18)	12(10.71)	26(23.42)	7(6.25)	24(21.61)	10(8.93)	82(73.21)	29(25.89)
Not a member	8(7.14)	31(27.68)	13(11.61)	27(24.11)	9(8.04)	25(22.32)	30(26.79)	83(74.11)
LAND OWNERSHIP								
Inherited	10(8.93)	5(4.46)	14(12.50)	3(2.68)	21(18.75)	7(6.25)	45(40.18)	15(13.39)
Purchased	22(19.64)	19(16.96)	13(11.61)	23(20.54)	19(16.96)	20(17.86)	54(48.21)	62(55.36)
Communal		3(2.68)		5(4.46)		14(12.50)		22(19.64)
Rented	1(0.89)		3(2.68)	2(1.79)		3(2.68)	4(3.57)	5(4.46)
Gift	1(0.89)			2(1.79)			1(0.89)	2(1.79)
Household owned	2(1.79)		1(0.89)		5(4.46)	6(5.36)	8(7.14)	6(5.36)

Source: Field survey, 2018. 2019, 2022 UPA=Up-scaling Project Area, NPA=Non Project Area, F=Frequency and %=Percentage.

Note: Figures in parenthesis shows percentage of the total.

Table 2b: Age, Household Size, Farming Experience and Farm Size of the Groundnut Producers

Variable	Kano		Katsina		Jigawa		Pooled results	
	UPA	NPA	UPA	NPA	UPA	NPA	UPA	NPA
Age (years)								
Minimum	23	19	25	20	26	18	25	19
Maximum	68	75	75	72	70	75	71	74
Mean	46	47	50	46	48	47	48	47
Household size (Number)								
Minimum	4	3	2	5	3	4	3	4
Maximum	37	34	33	35	38	39	36	36
Mean	21	19	18	20	21	22	20	20
Farm size (ha)								
Minimum	0.25	0.50	0.75	0.25	0.50	0.75	0.50	0.50
Maximum	1.50	2.50	3.50	3.50	4.50	3.75	3.17	3.25
Mean	0.88	1.50	2.13	1.88	2.50	2.25	1.83	1.88

Source: Field survey, 2018, 2019 UPA=Up-scaling Project Area, NPA=Non Project Area

Table 3 summarises the operational costs and revenues of producing groundnuts in UPA and NPA. The cost items comprise seeds, fertilizers, and pesticides, seasonal rents for farm land, farm labour and transportation of produce from the farms to homes. The cost of farm labour was the most important cost items in the production process accounting for 52% in UPA and 40% in NPA as revealed by the pooled results. Mean prices/kg of groundnut was as ₦113.00, ₦115.00 and ₦114.00 in Kano, Katsina and Jigawa UPA respectively. This indicates that, the price is relatively higher in Katsina compared to Kano and Jigawa. The average prices in Kano, Katsina and Jigawa NPA were reported as ₦149.00, ₦153.00 and ₦151.00, respectively indicating that, the mean price is a bit higher in Katsina and Jigawa compared to Kano. The pooled result revealed an average prices/kg of ₦114.00 and ₦151.00 in UPA and NPA respectively. These mean prices were used to compute the total revenues, the outcomes of which constituted the basis for the calculation of gross profit margins. The gross profit margin in Kano, Katsina and Jigawa UPA were ₦62,535.30, ₦57,910.40 and ₦ 59,857.22, respectively while in the NPA, the gross profit margin were ₦14,506.00, ₦20,684.00 and ₦ 19,638.00 for Kano, Katsina and Jigawa respectively. This shows that in the UPA, the gross profit margin is higher in Kano compared to Katsina and Jigawa while it was higher in Katsina compared to Kano and Jigawa in the NPA. The pooled results revealed the gross profit margin of ₦60,136.22 and ₦18,256.00 in UPA and NPA respectively, indicating potentials for higher profitability in up taking and adopting the improved groundnut varieties being introduced and promoted. These translate into gross margins percentage of 48% for UPA, and 27% for NPA. The gross profit margin in UPA and NPA revealed that by up taking and adopting the GIPP producers could increase their productivity and cash incomes. More so, In both UPA and NPA profitability can be improved either by manipulating the wages or number of farm labour, and/or other inputs, for example, more farm-yard manure than inorganic fertilizers.

The returns per Naira invested in groundnut production in the UPA and NPA were 0.91 and 0.37, respectively. This analysis shows more return to Naira invested in groundnut production in the UPA compared to NPA. Generally, the gross margin analysis shows groundnut production is a profitable venture in the study area and plays vital role in increasing smallholder farmers' income which would positively affect their livelihood and general standard of living. This corroborates similar findings in the five State of north-eastern Nigeria where similar project was introduced reported by Vabi *et al.* (2017) and Tererai *et al.* (2017) who reported that, groundnut is a profitable enterprise for smallholder farmers and also, Ibrahim *et al.* (2015) who revealed profitability of groundnut production based on the outcome of field trial in Samaru, Zaria.

Table3: Cost and Returns Analysis of Groundnut Production per hectre

	Kano		Katsina		Jigawa		Pooled Results	
Cost Component	UPA	NPA	UPA	NPA	UPA	NPA	UPA	NPA
Production Input								
Seeds (Kg)	10,905(16.30)	8,935(18.14)	11,229(16.90)	9,155(18.54)	11,118(16.69)	9,015(18.20)	11,084(16.71)	9,035(18.29)
Fertilizers (Kg)	16,800(25.47)	5,935(12.05)	16,890(25.42)	5,900(11.95)	16,980(25.50)	5,970(12.06)	16,890(25.47)	5,935(12.02)
Agrochemicals (Litre)	740(1.12)	605(1.23)	820(1.23)	630(1.28)	810(1.22)	610(1.23)	790(1.19)	615(1.25)
Farm Yard Manure (Kg)	2,645(4.01)	1,657(3.36)	2,670(4.02)	1,700(3.44)	2,650(3.98)	1,614(3.26)	2,655(4.00)	1,657(3.35)
Hiring of land (N/ha)	993(1.51)	760(1.54)	796(1.20)	740(1.50)	890(1.34)	834(1.68)	893(1.35)	778(1.58)
Cost of Storage (N/bag)	1,742(2.64)	1,470(2.98)	1,900(2.86)	1,482(3.00)	1,884(2.83)	1,476(2.98)	1,842(2.78)	1,476(2.99)
Labour (man-days)								
Land preparation	6,719(10.19)	5,296(10.75)	6,534(9.83)	5,150(10.43)	6,616(9.93)	5,250(10.60)	6,623(9.99)	5,232(10.59)
Planting	5,600(8.49)	5,890(11.96)	5,626(8.47)	5,910(11.97)	5,613(8.43)	6,014(12.14)	5,613(8.46)	5,938(12.02)
Fertilizer Application	3,706(5.62)	3,550(7.21)	3,862(5.81)	3,617(7.32)	3,850(5.78)	3,600(7.27)	3,806(5.74)	3,589(7.27)
Weeding	8,563(12.98)	6,460(13.11)	8,566(12.89)	6,440(13.04)	8,476(12.73)	6,477(13.08)	8,513(12.84)	6,459(13.08)
Harvesting	5,750(8.72)	7,658(15.54)	5,613(8.45)	7,666(15.52)	5,776(8.67)	7,650(15.45)	5,713(8.61)	7,658(15.50)
Transport Cost (N/100kg bag)	1,794(2.72)	1,050(2.13)	1,940(2.92)	1,000(2.02)	1,948(2.93)	1,010(2.04)	1,894(2.86)	1,020(2.07)
Total Variable Cost (TVC)	65,957.00	49,266.00	66,446.00	49,390.00	66,595.00	49,520.00	66,316.00	49,392.00
Returns								
Average output (Kg/ha)	1,137.10	428.00	1,081.36	458.00	1,109.23	458.00	1,109.23	448.00
Average price (N/Kg)	113.00	149.00	115.00	153.00	114.00	151.00	114.00	151.00
Gross Farm Income (N/ha)	128,492.30	63,772.00	124,356.40	70,074.00	126,452.22	69,158.00	126,452.22	67,648.00
Gross Margin (GR - TVC)	62,535.30	14,506.00	57,910.40	20,684.00	59,857.22	19,638.00	60,136.22	18,256.00
Returns per Naira Invested	0.95	0.29	0.87	0.42	0.90	0.40	0.91	0.37

Source: Field Survey, 2018, 2019

Note: Figures in parenthesis show the percentage of the total.

RoI = gross margin divide by Total variable cost

UPA = Up-scaling Project Area and NPA = Non Project Area

4.2 Difference in Gross Income of Groundnut Producers

Table 4 presents the computed chi-square tests on the gross income for project and non-project areas. The computed Pearson Chi-Square was 3459.184 and at the degree of freedom (df=1), the tabulated Chi-Square at 1% level of significance was 9.21 indicating that, X^2_{cal} was greater than X^2_{tab} (X^2_{cal} =3459.184 > X^2_{tab} = 9.21). If X^2_{cal} value was greater than X^2_{tab} value, then, there is significant difference between the variables estimated. This shows that, there is significant difference in the gross income of groundnut producers in the UPAs and NPAs. The implication is that, up taking and adopting improved groundnut production technology would increase the gross income of groundnut producers. This has a multiplier effect on increasing their level of income and standard of living. This is similar to findings of Muhammad (2015) which reveals significant difference between the gross income in groundnut production for participants and non-participants of N_2Africa technology.

Table 4: Chi – Square Tests of the Difference in Gross Income of Groundnut Producers

	Value	Df	Asymp. Sig. (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi-Square	3459.184[a]	1	.000		
Continuity Correction[b]	3458.648	1	.000		
Likelihood Ratio	3582.019	1	.000		
Fisher's Exact Test				.000	.000
Linear-by-Linear Association	3459.171	1	.000		
N of Valid Cases	272492				

Source: Field survey, 2018, 2019 (X^2_{cal} =3459.184 > X^2_{tab} = 9.21).

5. Conclusion and Recommendations

The survey examined the profitability of improved and local groundnut production for the benefit of smallholder farmers in Kano, Katsina and Jigawa states. The result revealed that the mean prices/kg of groundnut in UPA and NPAs were ₦114.00 and ₦ 151.00 with gross profit margin of ₦60,136 and ₦ 18,256, respectively, which translates to gross margins percentage of 48% for UPA, and 27% for NPA. The result further revealed that significant difference exists between the gross income of the producers in UPA and NPAs. Based on the findings, it is recommended among others that, farmers in both UPA and NPAs should be enlightened and encouraged to adhere to improved groundnut production technology since it proves more profitable than local production. This would go a long way to increase the farmers' level of income which in turns improves their living standard. This can be achieved through the use of demonstration farms etc. Future studies should be directed but not limited to marketing, profit efficiency and post-harvest losses on groundnut.

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REFERENCES

Echekwu, C., A, Ntare, B., N, Alhassan, U., Mohammed, S., G, and Alabi O, (2012) Proposal for Registration and Release of ICIAR 19BT (SAMNUT 24)as a new Grondnut Variety in Nigeria.

Food and Agriculture Organization. (2019) Top Countries in Groundnuts Production

(https://www.nationmaster.com/nmx/timeseries/nigeria-groundnuts-production)

Food and Agriculture Organization. (2012). Report-FAOSTAT Production Year 2012.

Food and Agriculture Organization. (2011). Report-FAOSTAT Production Year 2011.

Ibrahim, U., Ayinde, B, T., Dauda, H. and Mukhtar, A. A. (2012). Socio-Economic Factors Affecting Groundnut Production In Sabongari Local Government Of Kaduna State, Nigeria: *International Journal of Food and Agricultural Economics ISSN 2147-8988*, 1(1): 41-48.

Ibrahim, U., Mohammed, R., Danmaigoro, O. and Haliru, I. (2015). Optimum Returns in Groundnut Production Under the Influence of Poultry Manure Rates at Samaru in the Northern Guinea Savannah of Nigeria: *Gashua Journal of Irrigation and Desertification Studies (2015),* 1(1 and 2): 2489 – 0030.

International Production Assessment Division (2022) Peanut 2022 World Production. Retrieved fromhttps://ipad.fas.usda.gov/cropexplorer/cropview/commodityView.aspx?cropid=2221000&sel_year=2022&rankby=Production 26/12/2022

Kano State Government KNSG, (2006). National Population Commission, Census Report, Pp. 30 – 35.

Muhammad, H. (2015). Determinants of Inputs Demand and Adoption of Grains Legumes and Associated Technologies of N2Africa in Kano State Nigeria: Unpublished M.sc. Dessertation, Department of Agricultural Economics and Extension, Bayero University Kano.

National Agricultural Extension Research and Liaison Services (NAERLS) (2011). Agricultural survey for 2011 wet seasons National Agricultural Extension Research and Liaisons Service.

National Centre for Genetic Resources and Biotechnology (2014). Catalogue of Crop Varieties Released and Registered in Nigeria. Volume 8. Updated as of September 2014. pp 19-21.

Rai, S.K., Charak, D., and Bharat, R. (2016). Scenario of oilseed crops across the globe. 16. 125-132.

Simtowe, F., Asfaw, S., Diagne, A. and Shiferaw, B. (2008). Determinants of Agricultural Technology adoption: the case of improved groundnut varieties in Malawi: Contributed Paper presented at the Joint 3rd African Association of Agricultural Economists (AAAE) and 48th Agricultural Economists Association of South Africa(AEASA) Conference, Cape Town, South Africa, September 19-23, 2010.

Sushma, T., Narendra, K., Anushree, P., Ekta Joshi, D.S., Sasode R.S., Sikarwar, R.S., Tomar, M.K., Tripathi, V.S. K., and Singh, A.K. (2018) Breeding For Foliar Disease Resistance In Groundnut Using Conventional And Molecular Approaches. Proceedings of National Conference on Current Trends In Plant Science And Molecular Biology For Food Security And Climate Resilient Agriculture ISBN-978-93-5321-456-2 15-16, February 2018 • pp 56-62

Tererai, K., Emmanuel M., Benjamin, T. H., Munashe, R. G. and Tafirei, C. (2017). An Analysis of the Profitability of Groundnut Production by Small-holder Farmers in Chegutu District, Zimbabwe: *Journal of Economics and Sustainable Development ISSN 2222-1700 (Paper) ISSN 2222-2855 (Online),* 8(8): 2017.

Vabi, M. B., Sadiq, A. S., Mustapha, A., Suleiman, A., Affognon, H., Ajeigbe, H., A and Kasim, A., A. (2019) Patterns and drivers of the adoption of improved groundnut technologies in North-western Nigeria. African Journal of Agriculture ISSN 2375-1134 Vol. 6 (1), pp. 001-016, January, 2019.