Full-Length Research Paper

Benefits and Constraints of Cowpea Production in the Western Agricultural Zone of Nasarawa State, Nigeria

*Kuzhkuzha, M. D., Girei, A. A., and Ogezi, E.

Department of Agricultural Economics and Extension, Faculty of Agriculture, Nasarawa State University Keffi, Nasarawa State, Nigeria.
*Corresponding Author email: kmanarwa@gmail.com

ABSTRACT: The majority of Nigerian farmers, particularly cowpea producers, practice subsistence farming, which results in low production and inefficiency. Cowpea-related research, on the other hand, has tended to focus on technical and allocative efficiency, with little or no attention paid to the economic benefits of cowpea cultivation, especially in the study area. This study examined the benefits and restrictions of cowpea production in the western agricultural zone of Nasarawa State, Nigeria, as a result of this gap. A total of 160 cowpea farmers were chosen using a multi-stage sampling technique, and data obtained using a structured questionnaire for the 2018 farming season were analyzed using descriptive and inferential statistics, with the farm budget model being employed. The socio-economic analysis revealed that cowpea farming was dominated by men (68%), with farmers ranging in age from 41 to 50 years old (with an average of 42 years). The majority of the farmers (45%) had less than one hectare of land and had at least eight years of farming experience. The majority of farmers (48%) did not receive any extension visits from extension agents. Because the production was on a small scale and over a short period of time, the estimated average variable cost was ₦93, 082. The fixed cost was minimal. Gross Revenue (GR) was ₦249,202, Gross Margin and Net Farm Income were both ₦156, 119/ha, Gross Ratio and Operating Ratios were both 0.37, and return on investment was ₦1.7, indicating that cowpea production was profitable. Prices of inputs, pests and diseases were the key restrictions to cowpea production in the research region during the 2017 cropping season. According to the study, all stakeholders, including international agricultural support institutions, NGOs, government extension departments, and farmer associations, should work together to implement farming experiments and best management practices, such as optimizing input applications and information management and dissemination, in order to maximize the benefits of cowpea production not only in the study area, but throughout the country and beyond.

Keywords: Cowpea, production, benefits, constraints, farmers

INTRODUCTION

In the tropics, cowpea (*Vigna unguiculata* L. Walp) is an essential food grain legume. Its high protein content, flexibility to many types of soil and intercropping systems, drought resistance, and ability to improve soil fertility and avoid erosion make it a significant economic crop in many developing countries, including Nigeria and the research area. During the dry season, the sale of the dry stalks and leaves (haulms) and the dry outer covering of the seeds (husks) as animal feed provides a vital income for cowpea farmers in Nigeria, particularly in the study area. Cowpea is widely grown throughout Sub-Saharan Africa and plays a variety of important roles in the nutrition and economic lives of many people, particularly in the developing world. Cowpea has a protein content of about 23%, making it a good source of plant protein, according to Usman and Muhammed (2014). He went on to say that it has an impact on its ability to fill the void left by a lack of animal protein in the diets of ordinary people

in poor countries like Nigeria. Its ability to be an important companion crop in most cereal-legume intercropping systems stems from its nitrogen-fixing ability and the residual nitrogen derived from the decay of its leaf litter, roots, and root nodules (Okereke et al., 2006). As a result, the crop has a high potential for improving the socioeconomic lives of many people in the developing world. Despite its socioeconomic importance, the cowpea is generally produced by small-scale farmers in Nigeria, particularly in the study area, with rudimentary implements and an average land holding of less than two hectares. Family labour continues to be an important input, with land ownership being mostly communal, inherited, or rented; cases of outright purchase of land are rare. Capital, on the other hand, is a major constraint, as very few farmers have access to rural credits (Usman and Muhammed, 2014). Cowpea is a natural source of protein that is less expensive than that of more expensive animals, and it is thus the legume of choice for many African households (Nafiu et al., 2016). It can be found on most farmers' fields throughout Nigeria's savannah agro-ecological zone. It could be grown as a forage crop or as a dual purpose crop that provides high protein grain for human consumption as well as high nutritive value crop residue for livestock. Cowpea not only plays an important role in the socioeconomic activities of millions of people in West and Central Africa, but it also contributes to cropping system sustainability and soil fertility improvement in marginal lands by providing ground cover and plant residues, improving soil water holding capacity, fixing nitrogen, and suppressing weeds.

Cowpea has a high economic value in most African countries, particularly Nigeria, where it promotes trade between production and non-production areas. It is also a source of income for middlemen. Meanwhile, it is largely grown with direct labour in intensive cropping in most tropical countries, including Nigeria, which has low productivity due to high levels of illiteracy, high input costs, physical and biotic constraints, and the use of primitive and crude tools such as hoes, cutlasses, axes, and so on, all of which may have an impact on the agricultural transformation, productivity, and benefits of cowpea production. Most cowpea research has concentrated on traits such as yield enhancement through breeding, soil management, and other agronomic properties (Nafiu et al., 2016). Other factors affecting pulses, particularly cowpeas, include production efficiency, market dynamics, and consumer preferences, as well as financial benefits and production constraints. Because these factors have an impact on cowpea production, they must be researched on a regular basis. For example, if the financial benefits of cowpea production are unknown, it will affect not only the farmers who produce cowpea, but also all stakeholders who may be interested in participating in the crop's value chain.

Poor data collection and record keeping is one of the factors contributing to a lack of knowledge about the financial benefits of cowpea production, particularly in Nigeria. Other factors that influence the benefits of cowpea production, particularly in the study area, may include farmer socioeconomic characteristics, input use, labour use, costs and prices, whether the farmer produces for sale or for home consumption, and production methods. However, it is not out of place to state that cowpea is an important leguminous crop grown in virtually every part of Nigeria, particularly the north. Cowpea has also been labeled as a low-status food or "poor man's meat" due to its low cost in comparison to animal products. It contains a high concentration of carbohydrates (60-65%), proteins (21-25%), fats (less than 2%), vitamins, and minerals (Adelina and Fredy, 2014). (Usman and Muhammed, 2014). In fact, with rising health concerns, most people, particularly the urban population, are reducing their consumption of animal proteins in favour of pulses such as cowpea, which have a low fat content (Adelina and Fredy, 2014). Above all, cowpea is said to provide farm households with food for humans and animals, improve soil fertility, and generate income for its producers, making it important from both the standpoints of food security and income generation. As a result, the rationale for focusing on research into the benefits, constraints, and socioeconomic characteristics of cowpea farmers in the study area,

Benefits of cowpea production

Cowpea is a major leguminous crop that is grown in almost every part of northern Nigeria. Despite its high protein content, it has generally been regarded as a low status food or "meat of the poor." This is due to its low cost in comparison to animal products. It contains a diverse range of carbohydrates (60-65%), proteins (21-25%), fats (less than 2%), vitamins, and minerals (Adelina and Fredy, 2014). In fact, due to rising health concerns, most Nigerians, particularly the urban population, are reducing their consumption of animal proteins in favour of pulses such as cowpea, which have a low fat content. Cowpea also provides food to farm households for humans and animals, improves soil fertility and prevents erosion, and generates income for its producers, making it important from both the standpoints of food security and income generation. Because of the crop's socioeconomic importance, the importance of research into the benefits and constraints of its production cannot be overstated, particularly in the study area. Farmers make rational decisions, as well. As a result, they tend to make production decisions in favour of crops that will provide them with the most benefits, whether market-related or non-market-related.

Because cowpea has the potential to address malnutrition as well as food security issues, information about the benefits and constraints of cowpea production is critical. If production is found to be highly beneficial, farmers are likely to participate more in its production, and an increase in cowpea production would be beneficial to the country because cowpea has the potential to address malnutrition as well as food security issues due to its high nutritional value. Furthermore, increased production will improve farmers' livelihoods by increasing their earnings. The majority of value chain stakeholders, including wholesalers, retailers, and other intermediaries, are motivated by market value factors such as profits. As a result, information about these factors is critical in influencing their decision to participate in a value chain. Factors affecting market value will be identified as the economic benefit analysis is carried out; these factors can be used as a basis for policy and strategy development for both the government and the private sector in order to increase cowpea production. Some of the primary analytical approaches to economic benefit analysis are as follows: Profit margins, such as net profit margins, gross profit margins, and operating margins, are examples of profit margins. As shown below, the profitability model used in this study is gross margin analysis.

Gross margin specification

Olukosi and Erhabor (1988) maintained that gross margin is a good approximation of net farm income, since small-scale farmers usually have negligible fixed costs. This will therefore be used under the assumption that fixed cost component is negligible and the production period is a short term process. It is expressed as:

$$GM = \Sigma Q_y P_y - \Sigma X_i P_{xi}$$

Where;

GM = gross margin (₦/ha)
Q_y = output of crop (kg/ha)
P_y = unit price of the output (₦/kg)
$Q_y P_y$ = total revenue from the production (₦/ha)
X_i = quantity of the ith input used in kg/ha, L/ha or man-day/ha)
P_{xi} = price per kg of the ith input used in ₦/kg or ₦/L
$X_i P_{xi}$ = total cost associated with the ith input per hectare (₦/ha)
Σ = summation sign.

Constraints of cowpea production

According to FAOSTAT (2018), the average cowpea yield in Western Africa was estimated at 483 kg/ha, which was still 50% less than the estimated potential yield. The yield of some traditional cropping methods can be as low as 100 kg/ha (Abdullahi et al., 2015). While cowpea plays an important role in subsistence farming in terms of food security and livestock fodder, it is also regarded as a major cash crop by the majority of farmers in Central and West African states, with over 200 million people worldwide said to consume cowpea on a daily basis Oseni et al. (2015). The low productivity of cowpea production in Nigeria and Africa in general is primarily due to illiteracy, high input costs, physical and biotic constraints, a lack of high yielding seeds, and the use of primitive and crude tools such as hoes, cutlasses, axes, and so on. Savannah soils, on the other hand, are said to be deficient in nutrients, particularly nitrogen and phosphorus. In many tropical soils, phosphorus (P) is one of the most critical elements for crop production. Phosphorus is essential for cowpea yield because it stimulates growth, initiates nodule formation, and influences the efficiency of the rhizobium-legume symbiosis (Haruna and Usman, 2013).

MATERIALS AND METHODS

This paper is based on a study conducted in Nasarawa State, Nigeria, in the Western Agricultural Zone, where cowpea production is prevalent. Nasarawa state is made up of 13 local government areas (LGAs) divided into three agricultural zones by the Nasarawa Agricultural Development Programme (NADP). The Western zone is made up of four LGAs: Karu, Nasarawa, Keffi, and Toto, with Keffi serving as the zonal headquarters. According to the zonal office, Toto local government area has the lowest level of cowpea production in the zone. Both the Karu and Keffi local government areas are located in the state's guinea savannah climatic zone, with annual rainfall ranging between 1000mm and 1500mm. They both have tropical climates with distinct dry and wet seasons and annual mean temperatures ranging from 23^0C to 37^0C. Both are situated on a broad gentle rolling undulating plain with elevations ranging from 300 to 500 meters above sea level. The soils derived from this bedrock structure are generally deep and well-drained, with high fertility ratings and variable run-off potentials, with variations occurring primarily along streambeds where the soils are higher in clay content. The natural vegetation in the area is savannah, with dense tropical woodland, shrubs, and grasses. The population of interest constituted all the Cowpea Farmers of the Western Agricultural Zone of Nasarawa State, with farm households serving as the sampling unit. The study's sample size of 160 was determined using a multi-stage sampling technique. A total of 600 cowpea farmers were identified in the zone as a result of the reconnaissance conducted in the study area (NSADP, 2017).

This figure served as the study's sampling frame. For the 2018 cowpea cropping season, data were collected by administering a structured questionnaire in the study area. Labour input (man-day), capital inputs (₦), output (Kg), input prices (₦), seeds (Kg), and agro-chemicals are among the data collected (L).

RESULTS AND DISCUSSION

Socio-economic characteristics of the respondents

Gender and age distribution of the respondents

The gender and age distribution of respondents in the study area is shown in (Table 1). It shows that males (67.5%) outnumber females (32.5%) in the cowpea production industry. This is consistent with the findings of Usman and Muhammed (2014), Kenneth et al. (2013), Abdu et al. (2015), Nafiu et al. (2016), and Dadson et al. (2013), who reported in their respective studies that males outnumbered females in cowpea production, but differs from Nathan et al. (2015), who reported that females outnumbered males in cowpea production. According to the age distribution of the respondents, the 41 – 50 years' age range had the highest (32.5%), while the mean age grade was 42. This means that the respondents were still in their productive ages; an economic active age that can contribute positively to cowpea production and agriculture in general. This is consistent with the findings of Nafiu et al. (2016) and Kenneth et al. (2013), who both found similar results.

Table 1: Gender and age distribution

Variable	Frequency	Percentage	Mean
Gender			
Male	108	67.5	
Female	52	32.5	
Total:	160	100	
Age (years)			
21-30	13	8.13	
31- 40	44	27.5	
41- 50	52	32.5	
51 and above	51	31.88	
Total:	160	100	42

Source: Field Survey, 2019

Marital Status and Household Sizes of the Respondents

According to (Table 2), the majority of respondents (62.5%) were married. In their respective studies, Nafiu et al. (2016) and Ya'aishe and Petu-Ibikunle (2010) found

similar results. Meanwhile, the high proportion of widows (16.9%) involved in cowpea production in the study area may be related to the fact that cowpea production is a major poverty eradication crop that generates income, feeds the farmer, the land, and his livestock. Table 2 also shows the average size of a household. The average household size in the study area was 8.6, indicating that there was enough labour for cowpea production in each household. This finding could be one of the reasons for the high rate of family labour application in the study area, which was supplemented by hired labour, as indicated by the field survey. This also demonstrates or confirms that traditional agricultural production is labour intensive.

Table 2: Marital Status and Household Size.

Variable	Frequency	Percentage	Mean
Marital status			
Single	8	5.0	
Married	100	62.5	
Divorced	25	15.63	
Widow	27	16.88	
Total:	160	100	
Household size			
1 – 5	39	24.38	
6 – 10	99	61.88	
11 – 15	17	10.63	
16 and above	5	3.13	
Total	160	100	8.6

Source: Field Survey, 2019

Educational status and the primary occupations of the respondents

According to (Table 3), the respondents' literacy levels revealed that secondary education was the most common (48.8 percent) educational qualification among the cowpea farmers in the study area. Education influences one's personality, attitude toward life, and adoption of better practices (Ya'aishe and Petu-Ibikunle, 2010). An individual's higher level of formal education thus goes a long way toward shaping his or her mentality toward issues of profession or life in general. The highest percentage of respondents (48.8%) had secondary education as their highest educational qualification, indicating that respondents did not obtain the necessary level of education to acquire adequate knowledge about new innovations in cowpea farming. Notably, formal education is a necessary tool for the adoption of modern production technologies as well as an effective communication system that encourages an increase in the productivity or efficiency of any agricultural venture (Ugwumba et al., 2017). As a result, with a high rate of illiteracy (11%) and a low rate of tertiary education (21%)

Table 3: Educational status and the primary occupation.

Variable	Frequency	Percentage
Education(years)		
Primary School	23	14.38
Secondary School	78	48.75
Tertiary	34	21.25
Non formal	7	4.38
No education	18	11.25
Total:	160	100
Mean: 8.9		
Primary Occupation		
Farmers	111	69.38
Employed	20	12.50
Traders/Business	20	12.50
Drivers/Motor bike riders	6	3.75
Others	3	1.88
Total:	160	100

Source: Field survey, 2019

Table 4: Cowpea farm size and farming experience.

Variable	Frequency	Percentage	Mean
Farm Size –Cowpea (ha)			
0.1 – 0.5	45	28.13	
0.6 – 1.0	73	45.63	
1.1 – 1.5	7	4.38	
1.6 – 2.0	22	13.75	
2.1 and above	13	8.13	
Total	160	100	
Mean			1.01
Farming experience (years)			
1-10	78	48.75	
11 -20	32	20.0	
21 - 30	31	19.38	
31 - 40	12	7.5	
41 and above	7	4.38	8.5
Total	160	100	

Source: Field survey, 2019

in the study area, adoption of new technologies and effective communication, both of which are said to be necessary ingredients for increased productivity, efficiency, and, by extension, profit margins, may have been hampered, ceteris paribus. Meanwhile, farming was the most common primary occupation in the sturdy area (69%) followed by employed individuals (12%) and traders/business people (12%) who were also involved in cowpea production (may be to diversify their income).

Cowpea farm size and farming experience of the respondents

Table 4 displays the results for farm sizes and respondents' farming experiences. The majority of respondents (45.6%) cultivated 0.6 – 1.0 hectares, with an average of 1.0 hectare of cultivated land. According to Ogundari and Ojo. (2007) and Nathan et al. (2015), the majority of cowpea producers in the study area are involved in small scale cowpea production, with small holdings ranging from 0.05 to 3 ha per farmland. The majority (49%) had 1 – 10 years of farming experience, with an average of 8.5.

Based on these findings, it is possible to conclude that, while cowpea production is an old production practice in the study area, its popularity increased 1 – 10 years ago. This demonstrates that the managerial ability that leads to the efficiency of the majority of farmers can be inferred to be only moderately good. Because it is widely assumed that experienced farmers are more efficient, they must have a better understanding of climatic conditions and are thus expected to run a more efficient business (Jimjel et al., 2014).

Membership of Farmers' Association and Number of Extension Visit

Table 5 shows the respondents' involvement in farmers' cooperatives as well as the number of extension visits or otherwise. The majority of respondents (67.5 percent) did not belong to a farmers' association, and the majority of those who did belong had been members for 1 - 6 years. Those with a membership of 7 years or more made up only 3% of the total. The average number of years of membership in the farmers' association was 1.9. Farmers' group membership plays a significant and positive role in the economic efficiency of cowpea production, according to Omonona et al. (2010), Dadson et al. (2013), and Kenneth et al. (2013). The results for extension visits also revealed that the majority of respondents (48%) were not visited by extension agents, while 41% were visited once or twice during the 2017 farming season. This implies that the majority of respondents in the study area did not have access to some recent technologies on the best practices of cowpea production, which may have had a significant impact on the productivity and economic efficiencies of the cowpea farmers in the study area, as extension visits are said to affect economic efficiency of cowpea production significantly and positively, as reported by Oseni et al. (2015), Jimjel et al. (2014), and Dadson et al. (2013).

Gross margin analysis of the cowpea production in the study area

Cost, returns and profit analysis

Economic benefit is the ability of a firm to earn a profit. A profit however, is what is left of the revenue a business

Table 5: Membership of farmers' association and number of extension visit.

Variable	Frequency	Percentage	Mean
Membership of farmers' association			
0	108	67.5	
1 – 2	12	7.5	
3 – 4	23	14.38	
5 - 6	12	7.5	
7 and above	5	3.13	
Total	160	100	1.3
Extension contact			
0	77	48.13	
1 - 2	66	41.25	
3 – 4	13	8.13	
5 and above	4	2.5	
Total	160	100	1.9

Source: Field survey, 2019

Table 6: Average variable cost and benefit of cowpea production.

Variables	Average Value (₦/ha)	Percentage
Variable Cost		
Labour	76,667	82
Agro-chemicals	9,422	10
Seed	6,993	08
Total Variable Cost(TVC)	93,082	
Profitability Analysis:		
Gross Revenue (GR)	249,202	
Gross Margin (GR-TVC)	156,119	
Total Fixed Cost(TFC)	0	
Net Farm Income(NFI)= (GM – TFC),	156,119	
Gross Ratio(TC/GR)	0.37	37
Operating Ratio(TVC/GR)	0.37	37
Return to investment (GM/TVC)	1.7	70

Source: Field survey, 2019

generates after it must have paid all expenses directly related to the generation of the revenue, such as producing a product, and other expenses related to the conduct of the business activities. The costs and returns of cowpea production in the study area were estimated using budgetary techniques such as gross margin and profitability ratios. According to Olukosi and Irhabor (1988), farm budgetary analysis allows for the estimation of total costs as well as total revenue accrued to an enterprise during a specific production period. The difference between revenue (returns) and Total Variable Cost (TVC) constitutes the Gross Margin (GM), which measures a company's gross profitability. It is useful where the value of the fixed cost is negligible, as in the case of cowpea production in the study area, which is mostly conducted on a small scale (Arene and Mbata, 2008). The average size of a cowpea farm in the study area was 1.01. This implies that the vast majority of respondents were small-scale cowpea farmers with very low fixed costs. Because the cowpea production period is so short, the production costs were mostly variable (VC). Cowpea seeds, labour, and agrochemicals were the variable cost items, as shown in (Table 6). The estimated gross margin was used to examine the profitability of a cowpea production enterprise (GM). According to the findings, the average gross margin realized by a respondent was ₦ 156,119 per hectare. This was calculated by deducting the total variable cost (TVC) of ₦ 93, 082 from the total gross revenue (₦ 249, 202). The total variable cost of cowpea production (N93, 082) per hectare was calculated by adding the average cost of cowpea seeds used (₦ 6, 993/ha), the average cost of labour (₦ 76, 667/ha), and the average cost of agrochemicals (₦ 9, 422/ha). According to the findings from the study area (Table 6), cowpea seed accounted for 8% of the total variable cost, labour accounted for 82%, and agrochemicals accounted for 10%. This means that labour (82%) was the most important cost item in cowpea production in the study area, followed by agrochemicals (10%) and seeds (8%), respectively.

Table 7: Constraints of the cowpea production.

Constraints	Frequency	Percentage	Ranking
High Cost of inputs	155	96.88	1st
Pest and diseases	120	75	2nd
Lack of security	110	68.75	3rd
Non availability of credit facility	90	56.25	4th
Poor prices of cowpea	89	55.63	5th
High cost of transportation	82	51.25	6th
Others(theft, storage etc)	80	50	7th
Distance to the market	77	48.13	8th
Non availability of tractors	65	40.63	9th
Non availability of improved seeds	55	34.38	10th

Source: Field survey, 2019

This is consistent with the findings of Usman and Muhammed, (2014); Adeola et al. (2011); Ya'aishe and Petu-Ibikunle, (2010); (Abdu et al., 2015); Omonona, (2010); and (Dadson et al. 2013) who found that labour accounted for the majority of the variable cost of cowpea production in their respective studies. A net income of N 156.119 confirms the profitability of cowpea production in the study area, as does the return on a naira invested (GM/TVC) of N1.7, while the gross and operating ratios were 0.46 and 0.30, respectively. All of the ratios were less than one, indicating that cowpea production in the study area was profitable.

Constraints of the cowpea production in the study area

Table 7 details the constraints encountered by respondents in the study area. The first three most noticeable issues were the cost of inputs, particularly agrochemicals (97%), pests and diseases (75%), and insecurity (75%) (69%). Except for the insecurity, Usman and Muhammed, (2014); Jimjel et al., (2014); and Abdu et al. (2015) reported similar results in their studies. Other constraints included a lack of credit, low cowpea prices, high transportation costs, distance to market, a lack of tractors, and a lack of improved seeds.

Conclusion

According to the study's findings, the majority of cowpea farmers are between the ages of 41 and 50. Meanwhile, the socioeconomic analysis revealed that cowpea farming was dominated by male (67.5%) farmers between the ages of 41-50 years (with an average age of 42 years), which is a very active age range, and the majority of these farmers are males with more than 8 years of farming experience, a mean household size of 9, and 9 years of average school years. The majority of farmers (49%) have completed secondary school and are

married. The majority of farmers (45%) had farms that were less than one hectare in size. The majority of farmers (48%) received no extension visits from extension agents. Cowpea production was profitable in the study area, according to the farm budget analysis. The total variable cost (TVC) is ₦93,082 while the gross revenue (GR) is ₦249,202. Because the total fixed cost was negligible, the gross margin and net farm income were both ₦156,119. The profitability ratios (gross and operating ratios) were both 0.37. The average rate of return on investment (return on investment per naira invested) is ₦1.7, implying that for every ₦1 invested in cowpea production in the study area, a profit of 70 kobo is made. Cowpea production in the study area is profitable, according to all profitability indicators. Meanwhile, the three most significant constraints to cowpea production in the study area for the 2017 farming season were, in order, input costs, pests and diseases, and insecurity.

Recommendations

Based on the findings of the study, the following recommendations are considered useful with the motive of improving cowpea production and the livelihood of the cowpea farmers in the study area:

(i) There should be a general enlightenment campaigns by government and non-governmental organizations on the profitability of cowpea production to help engage the unemployed men and women and even farmers who have not yet ventured in to it so as to alleviate poverty not only in the study area but Nigeria in general.
(ii) Government should make available large farmlands for commercialized cowpea production to actively engage the teeming youths and improve the livelihoods of the farmers.
(iii) Government and non-governmental organizations should facilitate cheap and collateral free loans to enable farmers operate in larger scale.
(iv) Government and non-governmental extension

departments should endeavour to make themselves more visible in cowpea production activities, especially in the study area.

(v) Farmers are encouraged to participate in the farmers' cooperative activities so as to have more access to information on cowpea production, inputs and ways and means of accessing cheap capitals.

(iv) Farmers should take record keeping as one of the basic aspects of cowpea production.

REFERENCES

Abdu, Z., Makama, S. A., and Mikai'l, K. I. (2015). Resource Use Efficiency in Small Scale Cowpea Production System in Dawakin Kudu Local Government Area, Kano State, Nigeria, Journal of Agriculture and Sustainability, 8(2): 69-82.

Abdullahi, Z., Makama, S. A., and Mika'il, K. I. (2015). Resource Use Efficiency in Small Scale Cowpea Production System in Dawakin Kudu Local Government Area, Kano State, Nigeria, Journal of Agriculture and Sustainability, 8(2): 69-82.

Adelina, E. M. and Fredy T. M. K. (2014). Factors Influencing the Consumption of Pulses in Rural and Urban Areas of Tanzania: Tanzania Journal of Agricultural Sciences, 13(2): 59-74.

Adeola, S.S., Folorunso, S.T., Gama, E.N., Amodu, M.Y., and Owolabi, J.O. (2011): Productivity and Profitability Analyses of Cowpea Production in Kaduna State, Nigeria: Advances in Applied Science Research, 2 (4):72-78.

Arene, C.J. and Mbata, G.I.O. (2008): Determinant of profitability and willingness to pay for metropolitan waste-use in urban agriculture of the Federal Territory, Abuja, Nigeria: Journal of Tropical Agriculture Food, Environ. Extension, 7(1): 41-46.

Dadson, A., Bakang, J., and Smith, C. (2013). Estimation of Farm Level Technical Efficiency of Small-Scale Cowpea Production in Kumasi, Ghana: American-Eurasian Journal of Agriculture & Environmental Science. 13 (8): 1080-1087

Food and Agriculture Organization of the United Nations (FAO): FAOSTAT; 2018. Available at www.fao.org/faostat/en///data/QC.

Haruna, I.M. and Usman, A. (2013). Agronomic Efficiency of Cowpea Varieties under Varying Phosphorus Rates in Lafia, Nigeria: Asian Journal of Crop Science. 5(2):209-21.

Jimjel, Z., Maurice, D.C. and Comfort, Y. (2014). Determinant of Cost Efficiency in Cowpea Production: A Case Study of Adamawa State, Nigeria: International Journal of Science and Research 3(9).

Kenneth, W. S., Owuor, G., and Birachi, E.O. (2013). Analysis of Determinants of Productivity and Technical Efficiency among Smallholder Common Bean Farmers in Eastern Uganda, Current Research Journal of Economic Theory. 5(3): 44-55.

Nafiu G. O., Ayandiji A. A., Famuyide O. O., Jimoh K. A. and Vincent C. C., (2016). Profitability of Cowpea Production in Osun State: Case Studies of Iwo, Ayedire and Ola Oluwa Local Governments: American Journal of Business Economics and Management. 4(4); 62-65.

Nasarawa State Agricultural Development Programme (NSADP), Zonal Office Keffi, November, (2017).

Nathan, S., Moses, J. D., Jimjel, Z., and Altine, J. M. (2015). Profitability Analysis of Cowpea Production in Gombi Local Government Area of Adamawa State: International Journal of Advances in Agricultural Science and Technology, 2(11):1-8.

Ogundari, K. and Ojo, S.O. (2007). Economic Efficiency of Small Scale Food Crop Production in Nigeria: A Stochastic Frontier Approach: Journal of Social Science. 14(2): 123–130.

Okereke, G.U., Egwu, S.E., and Nnabude, P. (2006). Effect of Cowpea Organic Residues and Fertilizer on Soil Fertility, Growth and Yield of Upland Rice. Proceedings of the Eighteenth World Congress Soil Science. Philadelphia, Pennsylvania, USA, July 9-15.

Olukosi, J.O. and P.O. Erhabor, (1988). Introduction to Farm Management Economics: Principles and Applications. Agitab Publishers Ltd., Zaria, Pp. 77-83.

Omonona, B.T., Egbetokun, I., O.A. and Akanbi, A.T. (2010). Farmers Resource – Use And Technical Efficiency in Cowpea Production in Nigeria Economic Analysis & Policy, 40:1.

Oseni Y., Nwachukwu, W., and Usman, Z. A. (2015). Measurement of technical efficiency and its determinants in sampea-11 variety of cowpea production in Niger State, Nigeria: International Research Journal of Agricultural Science and Soil Science: 5(4): 112-119.

Ugwumba, C.O.A., Nwike, M. C., and OKoli, T.O. (2017). Economics of Water Yam Production in South Eastern Nigeria: Journal of Agriculture and Veterinary Science 10(7), 13-18.

Usman, S. M. and Mohammed K.F. (2014). Profitability Analysis of Cowpea Productionin Rural Areas of Zaria Local Government Area of Kaduna State, Nigeria. International Journal of Development and Sustainability, 3(9): 1919-1926.

Ya'aishe, A. P. and Petu-Ibikunle, D.W. (2010). Economic Analysis of cowpea Production among women farmers in Askira-Uba L.G.A., Borno state, Nigeria. African Journal of General agriculture, 6(1):7-9.