Factors affecting small scale farmers on Cowpea production in Wammako Local Government Area of Sokoto State, Nigeria

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The study was to investigate the factors affecting cowpea production among small-scale farmers in Wammako Local Government Area of Sokoto State. In achieving this objective, the following specific objectives were undertaken; description of the socio-economic characteristics of small-scale farmers, identification of the sources of information on improved cowpea production technologies among small-scale farmers, determination of the factors influencing cowpea production among small-scale farmers and determination of the constraints faced by small-scale farmers in the study area. Sixty (60) respondents were randomly selected for the study with the use of structured questionnaire. Descriptive statistics and tobit regression analysis were used to analyse the data. The results of the findings reveal that most of the sampled farmers were males and falls between the age range of 31-40 with majority (75%) of them married and having a household of about 1-10 persons. The result also revealed that most of the sampled farmers have farming experience of at least 6 years but were however, small scale farmers with low level of education with about 57.2% of the sampled farmers having attended no more than primary school. The study also revealed that most of the farmer's sources of information on improved cowpea production technologies were radio, family and friends and input sellers ranked 1st, 2nd and 3rd respectively. The study further revealed that farm size (significant at 1%) and number of extension visit (significant at 5%) were the major factors found to influence small scale farmers on cowpea production and the farmers were constrained by high cost of labour, prevalence of pest and diseases, inadequate finance and high cost of pesticides and fertilizers which were ranked 1st, 2nd, 3rd and 4th respectively. The study therefore recommends that extension agents should have a close contact with the farmers during the production season, agricultural department should act as a catalyst in providing knowledge regarding improved varieties and production technologies to farmers, there is also need to strengthen agricultural extension service in the villages, and government should provide input subsidies to farmers.

Key words: Analysis, Small scale, Farmers, Cowpea, Production, Wammako, Sokoto,

INTRODUCTION

Agricultural production in Nigeria is predominantly practiced in small-scale. The sector constitutes an important component of the Nigerian economy. In Nigeria, Food consumption expenditures accounts for a high proportion of total households’ expenditure and food demand has been on an increase over the years and was estimated at the rate of 3.5% per annum with food production growing at a rate of 2% per annum. The annual rate of population growth has been as high as 2.9 percent, thereby, creating a serious food deficit (Usman and Fatima, 2014). More so, the declining in productivity of agricultural products has created a wide gap between the demand and supply of food (Alabi et al., 2006). It is therefore the desire of Nigeria like any other country to be self-sufficient especially in food production. The country has potentials for production of different cereal and legume crops which include cowpea. By international standard, a farm that is less than 10 hectares is classified as small scale (Mgbenka et al., 2015). More than 80 percent of farmers in Nigeria are small-scale farmers.

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Agriculture is a major contributor to Nigeria’s gross domestic product (GDP) and small-scale farmers play a dominant role in this contribution. A small scale farmer depends on his efficiency in the utilization of basic production resources available to him. He makes a significant and important contribution to the national product, about 99 percent of total crops output. Small scale farmers are the main producer of 98 percent of the food consumed in Nigeria with the exception of wheat (Mgbenka et al., 2015).

Cowpea (Vigna unguiculata) is an annual leguminous crop indigenous to Tropical Africa. It is adapted to the tropics with temperatures between 28°C and 30°C and rainfall between 500 and 1200 mm per annum (Zongoma, 2015). It is of vital importance to the livelihood of millions of people providing nutritious grain and an inexpensive source of protein for both rural poor and urban dwellers. Cowpea performs well on well drained sandy loam to clay loamy soils with pH between six and seven (Agwu, 2004; Zongoma, 2015). In Africa, small-scale farmers produce process and sell snack foods made from this nutritious legume. The fodder is used as animal feed and can be sold during dry season to provide income to farmers. Cowpea can contribute significantly to increased food security and sustainability of crop-livestock systems. The high protein content of cowpea, its adaptability to different types of soils, drought tolerance, ability to improve soil fertility and prevention of erosion makes it an important economic crop.

Cowpea is an important companion crop due to its nitrogen fixing ability and plays a vital role in cereal-legume cropping system (Usman and Fatima, 2014). The importance of cowpea in Nigeria is becoming increasingly recognized in recent years particularly in the Southern states of the country even though the bulk of the production is done in the semi-arid zone of northern Nigeria. The crop therefore has a great potential in contributing to alleviation of malnutrition among resource-poor farmers.

According to Zongoma (2015), about 12.76 million hectares of land is cultivated annually with cowpea in the world. He estimated the worldwide production of cowpea to be 7.56 million metric tones with sub Saharan Africa accounting for 5.67million metric tones (i.e. about 75% of the total production). This gives an average annual yield per hectre of just 0.59 metric tons. The principal cowpea producing countries are largely from West Africa and these are Nigeria, Niger, Senegal, Ghana, Mali and Burkina Faso. Nigeria is the largest producer of cowpea in the world today with an estimated production index of 3.15 million metric tones per annum which constitute about 42% of world production (Zongoma, 2015). However, with a large population, Nigeria is also the largest consumer of cowpea in the world.

Cowpea has a protein content of about 23 % making it good source of plant protein. It therefore plays vital roles in the nutrition and economic life of many people in the developing countries and with the shortage in supply of animal protein and the low-level of income among most people making it difficult for them to readily afford animal protein, cowpea can therefore, fill in the gap created by the inadequacy of animal protein in the diet of common people in Nigeria. However, cowpea is generally produced by small-scale farmers using rudimentary implements. The aim of the study is to investigate on the factors affecting cowpea production among small-scale farmers in Wamakko Local Government Area of Sokoto State.

The specific objectives includes to:

i. Describe the socio-economic characteristics of small-scale farmers in the study area.
ii. Identify the sources of information on improved cowpea production technologies among small-scale farmers in the study area.
iii. Determine the factors influencing cowpea production among small-scale farmers in the study area?
iv. Determine the constraints faced by small-scale farmers in the study area.

The findings of this study will serve as a crucial policy instrument to government and other policy makers in judging the intrinsic merits of cowpea production on the target population. The study will help to identify the factors and constraints among small-scale farmers that are engaged in the production of cowpea. The information generated through this study is expected to support policy makers in designing policies that will have small-scale farmers in mind as they contribute the vast majority of farmers in Nigeria and the developing countries in general with respect to how to improve their yield, income and standard of living.

Furthermore, the research will serve as a basis for further researches by the private and public institutions adding to literature in the field. The outcome of the research work would also provide information and guidance to Governmental and Non-Governmental Organizations (NGOs) and developmental agencies wishing to sponsor intervention programmes that will improve the yield, income and standards of living of farmers that are engaged in cowpea production.

The study will focus on small-scale cowpea farmers and will be restricted to only Wamakko Local Government Area of Sokoto State however, can be generalized to other areas with similar agro-ecological conditions.

**MATERIALS AND METHOD**

**Description of the Study Area**

The study was conducted in Wamakko local government area of Sokoto State, Nigeria. Wamakko local govern-
The area covers an area of 697 square kilometers with a population of 179,619 (NPC, 2006). The ambient temperature of the area ranges from 14°C during harmattan period of November to January to 38°C during the hot season of March to May (SERC, 1992).

Wamakko shares boundaries with Tangaza and kware Local Government Areas to the East, Binji local government to the North, Sokoto North, Sokoto South and Dange-Shuni Local Government Areas to the South, and Bodinga and Yabo local government to the West. The local government is mainly populated by Hausa people. The major occupation of the inhabitants is farming and rearing of animals.

Sample Size and Sample Procedure

Two-stage sampling technique was employed for the study. The first stage involved the random selection of two (2) districts known for the production of cowpea whereas, the second stage involved the random selection of thirty (30) cowpea farmers from each of the selected districts making a total of sixty (60) cowpea farmers that were used for the study. The villages in which the research was conducted were Shama and Dundaye in Dundaye district. Gidankara and Gidan Ja’oji in Wammako district.

Data Collection

The data required for this study was collected through the use of a well-structured questionnaire. Information was collected on socioeconomic characteristics of cowpea farmers, Sources of information on improved cowpea production technologies and constraints faced by small scale-farmers in the study area.

Data Analysis

The data was analyzed using inferential statistics such as descriptive, frequency, percentage and mean score were used to satisfy objectives i, ii and iv, while objective iii was analyzed using tobit linear regression model. The explicit form of the function is presented as follows:

$$Y_i = a + B_1 X_1 + B_2 X_2 + B_3 X_3 + B_4 X_4 + B_5 X_5 + \ldots + B_n X_n + U$$
Y = Output
X₁ = Household head
X₂ = farm size
X₃ = Farm ownership
X₄ = Membership of Association
X₅ = Number of extension visit
X₆ = Access to credit
X₇ = Farm distance to nearest good road
X₈ = Village distance to nearest market
X₉ = Village distance to nearest good road

B = Coefficient
U = Error term
a = Constant

RESULTS AND DISCUSSION

Socio-economic Characteristics of Respondents

Gender

The table 1 below revealed that majority (86.7%) of the sample farmers was male with only 13.3% being females. This implies that men participates more in cowpea production than women and are more accessible than female farmers Abah and Tor (2012).

Age (years)

The table 1 below also show that 30.0% of the respondent falls between the age range of 31-40 years, 16.7% of the respondent falls between the age range of 50 years and above while, 13.3% and 11.7% of the respondents were between the age range of 21-34 and 41-50 years respectively. This suggests that most of the respondents are in their active years of farming (Zangoma, 2015).

Marital Status

The table 1 below also revealed that majority (75.0%) of the respondents were married while, 21.7% and 3.3% were single and divorcee respectively. This implies that most of the sampled cowpea farmers in the study area were married. This could be explained in terms of societal value in which one is considered responsible at a certain age if he or she is married (Bashir et al., 2018).

Occupation

The table 1 below also shows that most (53.3%) of the sampled cowpea farmers major occupation in the study area was farming. 28.3% and 18.3% of the respondents claimed to be civil servants and traders respectively. This implies that the major occupation of rural duelers is farming Abah and Tor (2012).

Educational Qualification

The table 1 below show that 31.7% of the respondents had no formal education while 28.3% of the respondents claimed to have attended secondary school with 25.5%, 13.3%, and 1.7% having attended tertiary, primary and adult education respectively. This implies that the sampled farmers were distributed across the educational level. This plays a part in the choice of their farming techniques Sabo et al (2013).

Household size

The table 4.1 below also shows that 38.3% of the sampled cowpea farmers have household size of 1-5persons while 33.3% of the respondents has household size of 6-10 persons with 28.3% having a household size of 11 and above persons. This implies that most of the sampled cowpea farmers have large family size that could support their farming activities Yohana (2015)

Farming Experience

The table 1 below also revealed that 23.3% of the sampled cowpea farmers have 1-5 years farming experience where as 76.7% of the sampled cowpea farmers had at least 6 years of farming experience which indicates that they are likely to understand some challenges faced by cowpea producers and some measures to address it (Zangoma, 2015)

Farm size

The table 1 below also shows that majority (61.7%) of the respondents have farm size of between 0.1-4.0 hectares whereas 20.0% of the farmers claimed to have 4.1-6.0 hectares of farmland with only 18.3% of the respondents having above 6 hectares of farmland indicating the subsistence nature of the farmers which suggests that they are small scale farmers Bahir et al. (2018).

Sources of Information on Improved Cowpea Production Technologies among Cowpea Farmers

The table 2 below presents the various sources of information on cowpea production technologies among cowpea farmers in Wammako Local Government Area of Sokoto State. The results of the findings indicates that the major source of information among small scale cowpea farmers in the study area were radio (60.0%), family and friends (58.3%) and input sellers (43.3%) ranked 1st, 2nd, and 3rd respectively. Other sources of information indicated by the farmer include contact farmers, extension workers, television, newspapers,
Table 1: Socio-economic Characteristics of Small Scale Cowpea Farmers.

<table>
<thead>
<tr>
<th>Variable</th>
<th>Frequency</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Gender</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>52</td>
<td>86.7</td>
</tr>
<tr>
<td>Female</td>
<td>8</td>
<td>13.3</td>
</tr>
<tr>
<td><strong>Age</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>20 years and below</td>
<td>8</td>
<td>13.3</td>
</tr>
<tr>
<td>21-30</td>
<td>18</td>
<td>30.0</td>
</tr>
<tr>
<td>31-40</td>
<td>17</td>
<td>28.3</td>
</tr>
<tr>
<td>41-50</td>
<td>7</td>
<td>11.7</td>
</tr>
<tr>
<td>Above 50</td>
<td>10</td>
<td>16.7</td>
</tr>
<tr>
<td><strong>Marital Status</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Single</td>
<td>13</td>
<td>21.7</td>
</tr>
<tr>
<td>Married</td>
<td>45</td>
<td>75.0</td>
</tr>
<tr>
<td>Widowed</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Divorced</td>
<td>2</td>
<td>3.3</td>
</tr>
<tr>
<td><strong>Occupation</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Farming</td>
<td>32</td>
<td>53.3</td>
</tr>
<tr>
<td>Trade</td>
<td>11</td>
<td>18.3</td>
</tr>
<tr>
<td>Civil service</td>
<td>17</td>
<td>28.3</td>
</tr>
<tr>
<td>Apprenticeship</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td><strong>Educational qualification</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>No formal education</td>
<td>19</td>
<td>31.7</td>
</tr>
<tr>
<td>Primary</td>
<td>8</td>
<td>13.3</td>
</tr>
<tr>
<td>Secondary</td>
<td>17</td>
<td>28.3</td>
</tr>
<tr>
<td>Tertiary</td>
<td>15</td>
<td>25.5</td>
</tr>
<tr>
<td>Adult Education</td>
<td>1</td>
<td>1.7</td>
</tr>
<tr>
<td><strong>Household Size</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1-5</td>
<td>23</td>
<td>38.3</td>
</tr>
<tr>
<td>6-10</td>
<td>20</td>
<td>33.3</td>
</tr>
<tr>
<td>11-15</td>
<td>6</td>
<td>10.0</td>
</tr>
<tr>
<td>16 and above</td>
<td>11</td>
<td>18.3</td>
</tr>
<tr>
<td><strong>Farming Experience</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5 years and below</td>
<td>14</td>
<td>23.3</td>
</tr>
<tr>
<td>6-10years</td>
<td>19</td>
<td>31.7</td>
</tr>
<tr>
<td>11-15years</td>
<td>8</td>
<td>13.3</td>
</tr>
<tr>
<td>16-20years</td>
<td>11</td>
<td>18.3</td>
</tr>
<tr>
<td>Above 20 years</td>
<td>8</td>
<td>13.3</td>
</tr>
<tr>
<td><strong>Farm Size</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>0.1-2</td>
<td>19</td>
<td>31.7</td>
</tr>
<tr>
<td>2.1-4</td>
<td>18</td>
<td>30.0</td>
</tr>
<tr>
<td>4.1-6</td>
<td>12</td>
<td>20.0</td>
</tr>
<tr>
<td>6.1-8</td>
<td>5</td>
<td>8.3</td>
</tr>
<tr>
<td>Above 8</td>
<td>6</td>
<td>10.0</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>60</td>
<td>100.0</td>
</tr>
</tbody>
</table>

Source: Field survey, 2018

Table 2: Sources of Information on Improved Cowpea Production Technologies among Small Scale Cowpea Farmers.

<table>
<thead>
<tr>
<th>Level of Income</th>
<th>Frequency</th>
<th>Percentage</th>
<th>Rank</th>
</tr>
</thead>
<tbody>
<tr>
<td>Radio</td>
<td>36</td>
<td>60.0</td>
<td>1st</td>
</tr>
<tr>
<td>Family and Friends</td>
<td>35</td>
<td>58.3</td>
<td>2nd</td>
</tr>
<tr>
<td>Input Sellers</td>
<td>26</td>
<td>43.3</td>
<td>3rd</td>
</tr>
<tr>
<td>Contact Farmers</td>
<td>20</td>
<td>33.3</td>
<td>4th</td>
</tr>
<tr>
<td>Extension Workers</td>
<td>16</td>
<td>26.7</td>
<td>5th</td>
</tr>
<tr>
<td>Television</td>
<td>9</td>
<td>15.0</td>
<td>6th</td>
</tr>
<tr>
<td>Newspapers and Magazines</td>
<td>7</td>
<td>11.7</td>
<td>7th</td>
</tr>
<tr>
<td>Agric Shows</td>
<td>4</td>
<td>6.7</td>
<td>8th</td>
</tr>
<tr>
<td>Research Centres</td>
<td>1</td>
<td>1.7</td>
<td>9th</td>
</tr>
</tbody>
</table>

Field Survey, 2018 *Multiple responses observed
The positive significant of farm size and number of extension visits indicates that the higher the number of extension visits and larger farm size will leads to a higher output among the cowpea farmers.

However, household head, farm ownership, membership of association, access to credit, farm distance to nearest good road, village distance to nearest good road, and village distance to nearest market not significant.

The results of the findings implies that, if cowpea farmers who were found to be small scale farmers have access to larger farmlands with frequent contact with extension workers, it will results to a higher output.

**Constraints to Small Scale Cowpea Farmers**

Table 4 above presents the constraints affecting small scale cowpea farmers in Wammako Local Government Area of Sokoto State. The results of the finding shows that the major constraints affecting the cowpea farmers were high cost of labour (71.7%), prevalence of pest and diseases (61.7%), inadequate finance (60.0%) and high cost of pesticides and fertilizers (51.7%) ranked 1st, 2nd, 3rd, and 4th respectively. Other constraints indicated by the cowpea farmers include high cost of farm inputs.
inadequate land, low level of extension visits, shortage of farm inputs, poor storage facilities, poor marketing system, and lack of processing facilities ranked 5th, 6th, 7th, 8th, 9th, 10th, and 11th respectively.

The results of the findings corroborates with that of Abah and Tor (2012); Sabo et al. (2013); Dungu (2013) who reported that cowpea farmers were faced with pests attack and diseases, high cost of inorganic insecticides and inadequate finance. The findings therefore, imply that small scale farmers lack adequate finance to purchase production inputs such as pesticides and fertilizer.

CONCLUSION

Based on the results of the findings, the study therefore, conclude that most of the farmer’s sources of information on improved cowpea production technologies were radio, family & friends and input sellers. The factors found to affect cowpea production among small scale farmers in the study area were farm size and the number of extension visits. Farm size and number of extension visit is therefore very vital as the farmers with larger farm size would adopt improved farming technologies. Likewise, the extension agents would guides the farmers on the best way to utilize the improved farming technologies. The study also conclude that the major constraints to small scale cowpea farmers were high cost of labour, prevalence of pest and diseases, inadequate finance and high cost of pesticides and fertilizers.

RECOMMENDATIONS

Based on the findings, the research wish to recommends the following;

1. Extension agents should have a close contact with the farmers during the production season so as to demonstrate to them the proper ways of applying modern farming technologies.
2. Agricultural department should act as a catalyst in providing knowledge regarding improved varieties and production technologies to farmers so that farmers receive better price for their produce to market at appropriate time
3. Since most of the farmers sources of information were informal, there is need to strengthen agriculture extension service in the villages, the focus could be more on training extension agent and also increasing extension agent capacity to reach farmers through provision of transport and housing.
4. Government should provide input subsidies since application of modern farming technologies goes with input such as fertilizer and pesticides. This will enables the farmers to expand their farmland which will lead to a higher cowpea production.

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