ECONOMIC ANALYSIS OF COWPEA PRODUCTION IN DONGA LOCAL GOVERNMENT AREA OF TARABA STATE, NIGERIA

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ABSTRACT

The study was conducted to analyze the economics of cowpea production in Donga Local Government Area of Taraba State. The specific objectives are to describe the socio-economic characteristics of the respondents, determine the profitability of cowpea production and identify the major constraints of cowpea production. Data were mainly obtained from primary source from 80 respondents using multi-stage sampling techniques, and were analyzed by means of simple descriptive statistics and gross margin. The result of the socio-economic characteristics revealed that 88.75% of the respondents were males, 48.75% fall within the age brackets of 21-30 years. About 82.50% attended different education levels with 43.75% having farming experience of 11-20 years, and 56.25% of the respondents had farm size of 3-5 hectares. Total cost of production was estimated at N26, 225.00 per hectare. The returns was estimated at N153, 250.00 for gross income, with gross margin, net income and per naira invested estimated at N66, 005.00, N37, 380.00 and N0.7565.00 respectively. Some of the major problems identified during the research included pest infestation (90%), inadequacy of farm inputs (87.50%) and lack of credit to the farmers. Proper enlightment and education on pest control, timely and adequate provision of inputs and credit by government to enhance productivity and income of farmers were recommended.
Keywords: Economic Analysis, Cowpea, Production, Profitability, Zing.

INTRODUCTION
Cowpea {*Vigna Unguiculata {L} walp*} is a source of relatively low cost, high quality protein and for West and central African farmers, a major cash crop (Dovio *et al.*, 1976}. The major producing countries in Africa are Nigeria, Senegal and Tanzania (FAO, 2002). Cowpea is grown in many parts of Nigeria though much of the production takes place in the savanna region of the country as the condition favours its growth. Increased cowpea production from intensified cropping system can play a key role in income generation in West Africa because of the multiple uses of cowpea grain and fodder in human and animal diet {Rachie, 1985}. It is an important staple food and cheap protein source to rural and urban dwellers with the demand for the commodity increasing in the nation. However, the domestic production of cowpea is in the hands of small scale farmers who obtain yield of 200-250kg/ha and in some cases zero yield due to lack of improved technologies (Chambers, 1992). Similarly, Agboola (1979) reported an average yield of 271.5kg/ha from the vast area of 3.8 million hectares cultivated to cowpea in Nigeria. It was also reported that with the use of improved technologies in cowpea production yield of 1,500-2000kg/ha can be obtained on sole cropping system (Chambers, 1992).

Cowpea is one of the major sources of protein in the West African diet. Ayinde (2004) stressed that the habits of most people thus revolves round Cowpea consumption which is either through direct cooking, processing into cowpea cake (akara) moimoi or as component of other meals (Cowpea soup, rice etc). The versatility of cowpea in this respect makes it a component of the food consumed at least thrice in a Week by most households in Nigeria. The cowpea grains and leaves have high protein content (24.8%) and contain essential amino acids (Walker, 1982; Hussain and Basaby, 1998). For this reason, cowpea has been referred to as "the poor man's meat" (Aykroyd and Daughty, 1982).

In Taraba State about 12.28 metric tones of cowpea are produced on 17,400m tons/hectare in 2005-2006 farming season, but this level of production still falls short of national demand (National Bureau of Statistics, 2007). The constraint limiting cowpea production includes pest and diseases, which not only reduce yield but also affect the quality of the harvested product (Botten and Bery, 1995). A number of national and international research institutions have tried to manage many control measures by introducing improved production technologies (Singh and Rachie, 1985). Some of which, however, are not readily accepted by farmers, probably because they have not been actively involved in their development (Abate *et al.*, 2000).

The importance of involving farmers in agricultural technology development came to light in the later part of the 20th centaury. Mutsaers *et al.* (1986) and Steiner (1990) developed field guides for on-farm research. They insisted on the involvement of farmers in constraint identification and technology development. Chambers (1992) indicated that technology development should be based on indigenous knowledge. To improve cowpea production there is need to develop sustainable control options that preserve and exploit bio-diversity. Therefore, a farmers' participatory approach was to identify the biotic constraints experienced by farmers and to inventory indigenous control method in cowpea production.

Cowpea is a crop which is grown through out Taraba State. Its production in Donga Local Government over the years has been dominated by small-scale farmers who do not have enough resources to improve their production. Research have confirmed that Cowpea yield usually becomes low as a result of insect pest and diseases, drought, excessive moisture, low fertility, weed and mixed cropping. Grain yield on farmers plots are usually less than 1000kg/ha (Gungula and Garjila, 2005). Despite Nigeria being the largest producer of the commodity (cowpea), the demand of the crop to meet up the nutritional requirement has exceed the supply in the study area and the nation at large owing to population explosion and failure of production to increase significantly. Therefore, there is the need to carry out an economic analysis of cowpea production in the study area. Based on this assertion, the broad objective of the study was to analyze the economics of cowpea production in the study area, while the specific objectives were to:
  i.   describe the socio-economic attributes of the respondents;
  ii.   determine the profitability of cowpea production, and
  iii.   find out the basic constraints of cowpea production;

RESEARCH METHODOLOGY

The Study Area

Donga LGA is situated in the south eastern part of the state, bordered to the east by Kurmi, to the South by Wukari,Gassol to the north and Bali LGA to the North east. The study area occupies an area of 3,120 km^2 with a total population of 87,021 people (NPC, 2006). The temperature of the area ranges between 28-35°c with annual rain fall of 1200-1800mm. Most of the inhabitants in the area are: Chamba, Kpanzo, kabawa, Ichen, Tiv and Hausa. These ethnic groups are predominantly agriculturally inclined. Most of the agricultural activities found in the area include crops and livestock activities such as yam, rice, cassava, citrus, cowpea, cattle, goats and poultry production.

Data Collection and Sampling Techniques

The main instrument for data collection was interview schedules. Secondary data were also obtained from printed materials such as text books, Journals, Internet as well as cowpea production literatures from relevant government agencies. Multistage sampling procedure was employed for this study. Five out of ten wards (Fada, Akate, Gayama Nyita and Gyata-Aure) were purposively chosen because of their prominence in cowpea production as the first stage. In the second stage, two villages were randomly selected in each of the five selected wards. Finally (third stage), from the sampling frame of 515 farmers. 100 farmers were randomly selected from the 10 villages.

Method of Data Analysis

Both descriptive and inferential statistic was employed for this study. Descriptive statistics were used in describing the socio-economic attributes of the farmers and the constraints of cowpea production. The inferential statistics involve the use of budgeting techniques (Gross margin analysis). The gross margin is the difference between gross farm income and the total variable cost of production. It was used to estimate the profitability level of cowpea production in the study area. Gross margin analysis is used to evaluate the efficiency of an individual business (Olukosi and Erhabor, 2005) while the net farm income is the difference between the gross margin and the total cost of production less the sum of fixed variable cost.

The gross margin model states as follows:

GM = GI − TVC ……………(I)
NFI = GM − TFC……………(II)
Where

GM = Gross margin per hectare (N)
GI =Gross income per hectare   (N)
TVC = Total variable cost per hectare (N)
NFI = Net farm income per hectare (N)
TFC = Total fixed cost per hectare (N)

The variable cost involved purchasing cost, transportation, storage, labour and contingencies, while the fixed costs include cost on land lease and utilities.

RESULTS AND DISCUSSION
Socio-Economic Characteristics of Respondents

The result of the socio-economic characteristics of cowpea farmers are presented in table 1.The result indicated that 88.75% of the respondents are males, while 11.25% are females. Age distribution of the respondents shows that majority (48.75%) fall within the ages of 31-40.This means that they are energetic young men as in Fadeji (2006). Marital status of the respondents indicated that 61.25% were married with 82.5% literacy attainment at various levels (primary, secondary and tertiary). This shows that farmers in the study area are educated. Farming is considered as the major occupation of the respondents representing 93.75%. 78% had the highest farming experience of 11 years and above with about 75% having farm size of 3-5 hectares while the remaining 25% had farm size of less than or equal to two hectares with mean farm size of 3.74. This indicated that the farmers in the study area are small scale holders.

Profitability of Cowpea Production

The costs and returns of cowpea production as shown in table 2 indicated that the average variable cost such as purchasing cost, transportation cost, storage cost, labour cost and contingency cost amounted to N87, 245.00 per hectare while the fixed cost amounted to N26,.225.00 per hectare. The percentage value of the expenditures implies that 74.89% (N65, 345.00) was spent on purchase while 13.98% (N12, 200.00) was spent on labour. 11.12% (N9, 700.00) of the remaining cost was on transportation, storage and contingencies. This result is shown in table 2. The returns in naira were stated in terms of gross income, gross margin, net income and return per each naira invested per hectare produced were given as N153, 250.00, N66, 605.00, N37, 780.00 and N0.7565 respectively.

PROBLEMS OF COWPEA PRODUCTION

The problems that were identified which directly or indirectly affect cowpea production in the study area include: inadequacy in farm input, lack of credit, lack of storage facilities, lack of improved varieties, high cost of agro-chemical and lack of government assistance. Pest infestation (90%) was found to be the most important problems of cowpea production in the study area as reflected in table 3. This problem was also high-lighted by Stephen et al, (2004). Another problem of cowpea production which constituted 87.50% of the respondent in the area includes farm inputs such as farm implements and some vital farm requirements (Agro-chemicals, fertilizers, seeds etc.). This could be attributed to government negligence in supplying these essentials inputs for the support of agricultural activities. The result of table 3 indicated lack of modern storage facilities also as a constraint (72.50%) for the production of cowpea in Donga Local Government Area. This could led to the increased attack of insect pest of cowpea .Other cowpea production problems found were lack of improved cowpea varieties for planting, high cost of agro-chemical, and lack of government support and assistance.

CONCLUSION

Based on the findings of the study, the results on socio-economic characteristics of the respondents revealed that the farmers are mostly males, and young with small size of holdings ranging between 3-4 hectares. The study also indicated that cowpea production is profitable with gross margin, net farm income and return per naira invested per hectare obtained as N66, 050, N37, 760 and N0.7565 respectively. However, the major problems of cowpea production that were identified include pest infestations, inadequate farm inputs and credit. It was, therefore, recommended that farmers be properly enlightened and educated on pest control and timely provision of adequate agricultural incentives (inputs and credit) by government to enhance productivity and income of the farmers.

Table 1: Distribution of Respondents Based on Socio-economic Characteristics. (n=80).

Variable	Frequency	Percentage (%)
Sex		
Male	71	88.75
Female	09	11.25
Age (Year)		
21-30	29	36.25
31-40	39	48.75
41-50	10	12.50
51-above	02	2.50
Marital Status		
Married	49	61.25
Single	15	18.75
Widowed	07	8.75
Divorced	09	11.25
Educational Background		
Non- formal Education	14	17.50
Primary school education	20	25.00
Secondary school education	29	36.25
Tertiary education	17	21.25
Occupation		
Farming	75	93.75
Fishing	03	3.75
Trading	01	1.25
Others	01	1.25
Farming experience (years)		
1-10	32	40.00
11-20	35	43.75
21-30	11	13.75
31-above	2	2.50
Farming size (Hectare)		
0-2	20	25.00

3-4	45	56.25
5-above	15	18.75
Total	**80**	**100.00**

Source: field survey, 2010

Table 2: Cost and Returns Analysis of Cowpea Production.

Costs/returns	Average values/ha (N)	% value
Variable costs		
Purchasing costs	65,345.00	74.89
Transportation cost	2,450.00	2.82
Storage/handling cost	2,150.00	2.46
Labour cost	12,200.00	13.98
Contingency	5, 100.00	5.85
Total variable costs	87,245.00	
Fixed costs		
Land lease cost	25,000.00	95.33
Utilities cost	1,225.00	4.67
Total fixed cost	26, 225.00	
Total cost (Vc + fc)	113,470.00	
Returns		
Gross income	153,250.00	
Gross margin	66,005.00	
Net income	37,780.00	
Return on naira invested	0.7565	

Source: Field survey, 2010

Table 3: Rank Order of Farmers Constraints of Cowpea Production

Major constraints *	Frequency	Percentage (%)	Rank
Pest infestation	72	90.00	1
Inadequacy in farm input	70	87.50	2
Lack of adequate credit	62	77.50	3
Lack of storage facilities	58	72.50	4
Lack of improved varieties	43	53.75	5
High cost of agro-chemical	74	42.50	6
Lack of government assistance	21	26.25	7
Total	**360**	**100.00**	

Source: Field survey, 2010
   * Multiple Responses existed.

REFERENCES

Abate, T, VanHuis, A. and Ampofo, J.K O. (2000). *Post Management Strategies in Traditional Agriculture*: An African Perspective. Annu. Rev. Ent 45, 631659.

Agboola, S.A. (1979). *An Agriculture Atlas of Nigeria* , Oxford University   press. London 95-99.

Aykroyd, W.R. and Doughty, J. (1982). Legumes in human nutrition. FAO nutrition studies, no. 19, FAO, Rome.

Bottenberg, H. (1995). *Farmers' perception of crop pests and pest control practices in Rainfed cowpea cropping system in Kano.*, Nigeria. INT. J. Pest manage 41, 195200

Chambers, R. (1992). *Scientist or resource-poor farmer*-whole knowledge counts PP.   115.

Dovio, F.E., C.E. William and I. Iwaka (1976). *Cowpeas:* Hoe preparation in use in West Africa, International Centre OHawa, Canada.

Fadeji, T.O. (2006*) Improved maize cultivation in the rural communities of   Kaduna State, Nigeria:* The problems and prospects. Proceedings 11th Annual Conference   of Agricultural Extension Society of Nigeria (AESON), 3rd -6th April, Pp172-183.

Gungula, D.T. and Garjilla, Y. (2005). The effects of phosphorus Application on growth   and yield of cowpea in Yola, Nigeria In: D.T. Gungula and J.I. Onu (eds). *Journal   of sustainable Development in Agriculture and Environment.* Vol. I. No, 1 Pp 96-   103.

Iben, M.S. (1984). The Nigeria farmer and Agricultural Institutions. An Assessment by Nigerian Institute of Social and Economic research Pp12-45

Mustaers, H.J.W., Fisher, N.M, Vogel, W.O. and Palada, M.C. (eds) (1986). A field Guide for on-farm research with special references to improvement of cropping systems and techniques in West and Central Africa IITA Ibadan. P 197.

NBS (2007) National Bureau of Statistics Annual Agricultural survey report for 1994/95-2005/06.

NPC (2006). Facts and Figures about Nigeria, National Population Commission,   Abuja-Nigeria.

Olukosi, J.O. and Erhabor, P.O (2005). *Introduction to farm management principles   and Applications.* AGITAB Publishers, Zaira -Samaru. P 77.

Rachie, K.O (1985). Introduction in Cowpea Research production and utilization (S.R Singh and L.o Rachie (eds). John Wiley and sons, New York pp 21-28.

Singh, S.R and Jackal, E.N (1985). Insect pest of Cowpea in Africa the life circle, Economic importance and potentials for control in S.R Singh and K. O. Rachie   (eds). *Cowpea*

research, Production and utilization (CRPU), S.R.   JohnWiley and sons Ltd. Pp 217-321.

Steiner, K.G. (1990). Manuel D' Experimental en mihem patsan pour les projects de Development Rural. CTA. Wageningen. 235 Pp.

Stephen, J; Mshelia, S;I. and Kwaga, B.T. (2004). *Research use Effeciciency In Cowpea production in the north-East zone of Adamawa State, Nigeria*.

Walker. A.F. (1982). Physiological effects of legumes in the human diet: a review   on plant food 4, 514.