

ECONOMICS OF WHEAT PRODUCTION IN HADEJIA LOCAL GOVERNMENT AREA OF JIGAWA STATE, NIGERIA

*Yaro A.M., *Yakasai, M. T., *Abdullahi, A., and **Muhammed A.B.

*Department of Agricultural Economics & Extension, Kano University of Science & Technology, Wudil P.M.B 3244, Kano State, Nigeria.

** Department of Agricultural Economics & Extension, Kano University of Science & Technology, Wudil P.M.B 3244, Kano State, Nigeria.

Corresponding Author: musatukur@yahoo.com

ABSTRACT

The study is on the assessment of the contribution of the economic factors affecting wheat production in Hadejia valley irrigation project and the problems facing it. Fifty two (52) wheat farmers from the four groups of wheat farmers in Hadejia Valley Irrigation Project, provided information required for the research work, which were collected by the use of well structured questionnaire. The data collected was analyzed using simple multiple regression model. The results obtained shows that all the factors included in the model, such as farm size, amount of seeds, fertilizer, labour and herbicides, had positive coefficients indicating that increasing the use of these factors would increase wheat production. The value of R^2 as 0.7913 implies significant relationship between the tested independent variables and dependent variable. There is need for government intervention to supply all the necessary inputs for wheat production. The major production constrains/problems in the study area were high cost of inputs, labour inadequate irrigational water and inadequate extension services.

KEY WORDS; Assessment, factors, Wheat, Production, Hadejia, Jigawa

INTRODUCTION

Food and Agriculture Organization FAO (2003) document reported that wheat was originally a wild grass. Evidences exist that it was first grown in Mesopotamia, Tigris and Euphrates river valley in the middle east nearly 10,000 years ago. In 1000 years the world population has double ten times from less than six billion now to over ten billion. Most of the calories that made the increment possible have come from the three plants maize, rice and wheat. The oldest, most widespread and until recently biggest of the three crops is wheat, to the first approximation wheat is the staple food to mankind, and its history is that of humanity. Yet to date it had lost its crown. The tonnage of maize harvested in the world began consistently to exceed wheat for the first time in 1998, rice followed suit in 1999, and genetic modification which has transformed maize, rice and soybean has largely passed wheat by double to such an extent that it is in danger of becoming an "Orphan crop".

Wheat spread via Sudan to Lake Chad, the introduction and spread was as a result of Arabian influence from 12th century onward (Falaki, 1990). While in Nigeria wheat is presently grown in 67000 hectares with production of 73000mt with yield of 1.09 Mt/ha. (FAO, 2003). Wheat plays a vital role in human nutrition because, it contains all the essential amino acids for human growth and development and it is also rich in vitamin E.

Duxbury, (2000) stated the important role of wheat to the national economy, such as

provision of food, provision of raw materials to the industries and significant contribution to livestock feed in the world. Over the years various programmes have been organized by governments to improve local wheat production in northern states of Nigeria and some national programmes such as National Agricultural Land Development Authority (NALDA), for the development of agriculture. Despite all the efforts, wheat farmers are changing to other crops such as rice.

This situation should be of great concern to the country at large, since subsistent farmers constitute a great population of wheat producers. It is pertinent to study the factors that possibly affect wheat production and the attendant problems facing its production in the study area, such that information made available will help the wheat farmers particularly on how to improve their wheat production. It will also help the policy makers to re-appraise the government position on wheat production.

Methodology

Study area

Hadejia Local Government is among the 27 Local Government Areas of Jigawa State, located between the latitude of 12° to 18° N of equator and longitude of 8° E - 10° 33' E of the Greenwich, it lies near the northern limit of the rain bearing wind (Abdulkarim, 2000). It is bordered by Auyo Local Government to the southeast, by Kirikasamma Local Government to the east, by Malam-Madori Local Government, to the northwest.

The entire area falls under the span of Sudan vegetation, the climate condition is such that, during hot season the temperate reaches up to 33°C at day time, between March to October, the temperature falls to as low as 10°C at night in November to February (Abdu, 2000). The area experiences rainfall which is evenly distributed throughout the rainy season and serves as the main source of irrigational water for wheat production in the study area, (Abdu, 2000). Census figure of 2006 shows that, Hadejia Local Government Area has provisional census figure of 105,628 with 54,830 males and 50,798 females and 32% of the people are farmers.

Sampling procedure

Four groups of wheat farmers in Hadejia Valley Irrigation Project namely Mai alkama (Hadejia), Auyo, Adaha and Yamidi were purposively selected based on the intensity of wheat production activities in the area. Simple random sampling technique, where each farmer from the various groups has equal chance of being selected was employed. Thirteen farmers were selected from each of the groups, thus making a total of fifty two (52) respondents as the sample size.

Information on farm size, seeds, fertilizer, Labour, herbicides, amount of output: and the problems militating against wheat production were collected and analysed.

Data analysis

The analytical tools employed for the analysis of data were descriptive statistics and multiple

regression models. Linear and the Cobb-Douglas production functions were tried and the Cobb-Douglas or power function was selected based on the value of R², signs of the parameter estimates and the significance of the variables. The power function takes the following form:

$$Y = a + b_1x_1 + b_2x_2 + b_3x_3 + b_4x_4 + b_5x_5 + e$$

$$\log y = \log a + b_1 \log x_1 + b_2 \log x_2 + b_3 \log x_3 + b_4 \log x_4 + b_5 \log x_5 + e$$

Where

- Y = Output of wheat (Kg)
- X₁ = Farm size (ha)
- X₂ = Quantity of seeds (Kg)
- X₃ = Quantity of fertilizer (Kg)
- X₄ = Total labour used (man days)
- X₅ = Herbicide applied (litre)
- e = Error term
- a = Constant term
- b₁-b₅ = Regression coefficients

RESULTS AND DISCUSSION

Multiple regression analysis

Attempt was made here to establish relationship between the dependent variable and independent variables which were farm size (ha), seed used (kg), quantity of fertilizer (kg), labour used (mandays) herbicide applied (litre) and amount of output (Kg).

**Table 1: The regression coefficients of the Cobb-Douglas Production function
 Analysis of result from Cobb - Douglas function**

Variables	Regression coefficients	Standard error	T - value	R ² 0.7613
Farm size x ₁	0.32580	0.95820	0.3400*	
Seeds x ₂	0.21090	0.20511	0.0282ns	
Fertilizer x ₃	0.13000	0.61230	0.2123*	
Labour x ₄	0.63470	0.80150	0.7919*	
Herbicide x ₅	0.41020	0.25011	0.6401ns	

Source: Field Survey (2009\2010)

The regression coefficients from Cobb - Douglas production function are presented in Table 1. Linear and Cobb - Douglas function were tried but the later was selected as the best for the data, the table above shows that the adjusted value of the coefficient of the multiple regression, R² was able to explain 76.13% of the variation in the production by the inputs. The results revealed that, all the factors included in the model have positive coefficients. The factors were farm size, seeds, fertilizer, labour and herbicides, implying that increasing any of these

factors, holding all the other factors constant, would increase wheat production in the study area by values corresponding to the coefficient of the factor in question. However, it should be noted that farm size, fertilizer and labour were observed to be statistically significant at 5% level of significance from the critical t-value of the regression coefficients, while seed and herbicide are not statistically significant. However, the sum of elasticities is the direct measure of elasticities response of inputs.

Where:

$b_1 = 1$ indicates constant return to scale

$b_1 > 1$ indicates increasing return to scale

$b_1 < 1$ indicates decreasing return to scale

Therefore, $E_{b_1} = 1.699$ indicating increasing return to scale.

Production constraints

In the course of wheat production, space was provided on the questionnaire for respondents to state their production constraints, cause of problems and possible solutions. From the data collected the results show that, wheat farmers have the following problems/constraints:

Inadequate water supply from dams and rivers, high cost of farm inputs, such as fertilizer, seed, herbicide and pesticide, high cost of water pumping machine, labour was expensive in the study area. Other problems include lack of government intervention in wheat production, inadequate capital, inadequate extension workers in the study area and poor management of the irrigation scheme by the government.

Conclusion

Small farmers, who are producing at subsistence or small scale levels, dominate wheat production in Hadejia Local Government of Jigawa State. The result shows clearly that, 58% of the respondent owned 0 - 1 hectare of land. The finding of this research work agreed with FAO, (2003). The results indicated that all the factors included in the study contribute positively to the production of wheat in the area, and increasing them would increase wheat production. These factors include farm size, seeds, fertilizer, labour and herbicides. To date wheat has lost its crown because the maize harvested in the world began consistently to exceed wheat in 1998, rice in 1999. The problems of wheat production include inadequate water supply, high cost of farm inputs, inadequate extension workers and poor management of irrigation projects.

REFERENCES

- Abba, A and Lewicki, F. (1990). Wheat production in kano State Nigeria. , paper presented the 1st National wheat conference in Nigeria, held between 29th-2nd February 1990, At University of Maiduguri, Nigeria. P 29.
- Abdu, H. (2000), Promotion of participatory irrigation management in Hadejia valley irrigation project. P 22.
- Duxbury, W. (2000). Environmental Economics, the World Bank Street Washington DC 20433 US, York, Holliston (3) SUD SUD UK.
- Falaki, A. M.(1990). Agronomy of irrigated wheat in Nigerian savannah, paper presented

Recommendation

From the results obtained the researchers suggested that they will be of significant importance to wheat farmers, policy maker's government (at both levels) and those who have interest in undertaking further research on economic analysis of wheat production. The suggestions made were:

Government should establish a new irrigation project for wheat production and provide a measure for managing the existing ones; this could help in meeting the domestic demand of wheat in the country. Government should provide all the necessary inputs for wheat production at a subsidized rate, recruit more extension workers in addition to the present ones.

Government should establish an institution that will consider rural and small scale farmers in terms of credit. Government should ensure that there is less bottleneck or bureaucratic channel in the source of sourcing the loan. In the research analysis, it is found that 6% of the respondents in the study area have access to financial institution.

Farmers should double their efforts towards wheat production in the study area and the country at large to avoid making it an orphan crop.

Government should increase its commitment towards bringing market closer to the producers in the area.

Non governmental organizations such as Sasakawa Global 2000 Programme, should double their efforts towards boosting wheat production in the study area and the country at large.

the 1st National wheat conference in Nigeria, held between 29th-2nd February 1990, At University of Maiduguri, Nigeria. P 57.

FAO, (2003) Fadstat, database record. <http://apps/fao.org>.

HadejiaJama'are River Basin Development Authority, (2003).Annual Report.P. 543.

United State Department of Agriculture,USDA, (2003).Annual Report.