



Assessment of the Socio – Economic Factors Affecting the Adoption of Dairy Cattle Production Technologies Among Cattle Rearers in Sardauna LGA, Taraba State, Nigeria.

¹Simon, B.P. ²Alam M.K, ³Hamidu, D. ⁴Madefa, L.T., & ⁵Akade, B

^{1&2}Department of Agricultural Extension and Management, Taraba State College of agriculture, Jalingo, Taraba State, Nigeria. ³Department of Agricultural Education Federal College of Education Yola, Adamawa State. ⁴Department of Agricultural Economics and Extension, MAUTECH, Yola, Adamawa State. ⁵Department of Animal Health, Taraba State College of Agriculture, Jalingo, Taraba State.

Abstract

The study assessed the socio-economic factors affecting the adoption of diary cattle production technologies among cattle rearers in Sardauna Local Government Area, Taraba State, Nigeria. Primary data were collected from seventy (70) respondents using purposive and random sampling techniques and were analyzed using descriptive statistics and multiple regression analysis. The results revealed that majority (71.43%) of the respondents were male and 78.57% of the respondents are in there productive years. Also, 85.72% of the respondents had no access to extension services, the major diary cattle production technologies were identified as: cross breeding, artificial insemination and improved breeds. The multiple regression results show that: sex, age, marital status, education and farming experience were the major determinants of adoption of diary cattle production technologies in the study area. The major constraints to the adoption of diary cattle production technologies were identified as: inadequate and high cost of the

technologies, inadequate infrastructural facilities, inadequate extension agents among others. Recommendations were made that cattle rearers should form cooperatives in order to access credit facilities from financial institutions. Also awareness should be created in the study area on the availability of the dairy cattle production and utilization.

Keywords: Dairy Cattle, Cattle Rearers, Cattle, Economic, Adoption, Production, Technology

Introduction

The livestock sub-sector is an important component of Nigerian agricultural economy in terms of being both an economic enterprise and as an employment generating sector at the primary, secondary and tertiary level (CBN, 2000). In terms of the provision of the much needed milk and meat to average Nigerian, the cattle sub-sector account for more than 50% of Nigerian total milk and meat supply (Okuneye, 2002). Apart from playing a major role in contributing to food and income generation through milk and meat livestock are valuable asset to farmers as they are store of wealth and collateral for credit. Dairy farming has proved to be a way of livelihood strategy for small holder farmers in many countries as it is an instrument through which the socio-economic conditions of farmers can be improved. It is also a valuable source of nutrition and income as well as an

avenue of asset accumulation (Food and Agricultural Organization 2009). The adoption of improved technology in dairy cattle production is said to be pathway out of poverty for many farmers in developing countries (Bandiera and Rasul, 2006). As a buffer and alternative strategy to unpredictable seasonal changes, various dairy technologies have been promoted by Government of Nigeria as well as non – governmental organization (NGOs) in Nigeria as a way of improving productivity. According to Chiamakaet *al.*, (1995), adoption of new technology may be influenced by factors such as effectiveness of the extension agency, net values of technology, economic strength and education of farmers integrated package of farm support measures, age of farmers and size holding. A gap of more than 50% still exists between potential and actual yield obtained from dairy farming, the

major reason for this is the non- adoption of recommended technologies by dairy farmers (Mohmood and Sheik, 2011). It is therefore, pertinent to determine the adoption of improved dairy production, which factors hinder adoption of new dairy production technologies? Are dairy farmers aware of these technologies? Therefore, the main objective this study is to assess the socio-economic factors affecting the production of dairy cattle production technologies in Sardauna Local Government of Taraba State Nigeria. The specific objectives were to: describe the socio-economic characteristics of dairy cattle farmers, identify the dairy cattle production technologies adopted by cattle farmers and determine the factors affecting the adoption of dairy cattle production technologies in the study area.

Methodology

The Study Area

The study was carried out in Sardauna Local Government Area of Taraba State. Sardauna L.G.A is located between latitude $5^{\circ} 30'N$ to $7^{\circ} 18'N$ and longitude $10^{\circ} 18'N$ to $11^{\circ} 37'NE$. The LGA has landmass of $3885km^2$ and a population of 224,437 (NPC, 2006). Furthermore, the land is blessed naturally with almost every condition which favours the production of horticulture crops such as tea which considered the most consumable stimulant beverage followed by coffee. Sardauna Local Government has a suitable temperature and many man made forest scattered all over the place. The plateau experiences two seasons namely the wet and dry seasons. The wet season starts in March and ended October. Thus, average rainfall ranges between 1866mm-3000mm while dry season start in November and end in February. The temperature does not exceed $25^{\circ}C$. The soil is predominantly loamy but clay is also found in the valley. Hence, the soil of the area is highly acidic with PH ranging from 5-2-5-9 Taraba Agricultural Development Programme (TADP Gembu, 1986). The main occupation of the people of Sardauna area is farming and grazing i.e. crop cultivation and rearing of animals, through cattle rearing receive greater attention than any other farm or farming.

Sampling Technique

Dairy cattle rearers constituted the study population, snow ball and simple random sampling techniques were employed to draw the respondents; five villages within LemeArdoSaja area were selected based on their identification

by house hold heads that dairy production technologies is practice in the area. Then in each of the five villages, Dairy cattle rearers were selected using simple random sampling technique through lottery method to give rise to 75 respondents for the distribution of the questionnaire.

Method of Data Analysis

Descriptive statistics were used to analyze all the specific objectives of the study the descriptive statistics used include: frequency, mean and percentages. Also multiple regression analysis was used to test the hypothesis formulated; i.e. to determine the respondent’s socio-economic characteristics influencing the adoption of dairy cattle technologies in the study area. The implicit form of the model is specified as: Y = level of adoption of dairy technologies

X_1 = sex (male=1; female=0)

X_2 = age (years)

X_3 = marital status (married = 1; otherwise = 0)

X_4 = education level (years of formal education)

X_5 = farming experience (years)

A = constant

B, = b5 = co efficiency of $X_1 - X_2$

U = error term

Results and Discussion

Results

Table 1: Socio-Economic Characteristics of the Respondents

Variables	Frequency	Percentage (%)
Gender		
Male	50	71.43
Female	20	28.57
Age (Years)		
Below 30	15	21.43
31-50	40	57.14
51 and above	15	21.43
Marital Status		
Married	45	64.29
Single	15	21.43

Widow	10	14.28
Family Size		
1 – 4	35	50.00
5 and above	35	50.00
Occupation		
Cattle Rearing	40	57.14
Civil servant	10	14.28
Student	10	14.28
Educational Level		
Non-Formal Education	35	50.00
Primary Education	10	14.28
Secondary Education	10	14.28
Tertiary Education	15	21.44
Access to Extension Service		
Yes	10	14.28
No	60	85.72
Source of Finance		
Personal Savings	40	57.14
Cooperatives	05	7.14
Banks	10	14.28
	15	21.44
Friends/Relatives		
Total	70	100

Source: Field Survey, 2017.

Table 2: Dairy cattle production Technologies Available in the Study Area

Technology	Frequency	Percentage
Artificial Milking Machine	04	5.71
Cross Breeding	25	35.71
Artificial Insemination	20	28.57
Improved Breeds (Hybrids)	08	11.48
Improve Ration	13	18.58

Total	70	100
-------	-----------	------------

Source: Field Survey, 2017

Table 3: Multiple regression result on the influence of socio-economic characteristics on the adoption of dairy cattle technologies.

Variable	Regression Coefficient	Standard Error	T-Statistics	Probability
Sex (x ₁)	4.823	1.323	0.001	0.000
Age (x ₂)	1.997	1.022	2.051	0.062
Marital Status (x ₃)	0.940	1.787	4.650	0.001
Education (x ₄)	0.747	0.530	0.238	0.004
Farming	0.107	0.514	3.213	0.46
Experience (x ₅)				
Constant	7.380	2.610	8.090	0.000
R ²	0.637			
Adjusted R ²	0.64			
Std error of the estimated	3.216			
Total	70	100		

Source: Field Survey, 2017

Durbin Watson 1.657

NB X= Significant at 1% level

XX= Significant at 5% level

Table 4: Cattle rearers' level of adoption of dairy cattle production technology (n=70)

Technologies	Mean	Remark
Artificial Milking Machine	1.7	Moderate
Cross breeding	2.0	High
Artificial Insemination	1.6	Moderate
Improved Breeds (Hybrids)	2.1	High
Improved Ration	2.4	High

Source: Field Survey, 2017

Table 5: Constraint affecting the adoption of dairy cattle technology (n= 70)

Constraints	Frequency	Percentage
Inadequate funds	70	100
High cost of technology	65	92.86
Inaccessibility of Technology	58	82.86
Lack of Awareness	55	78.57
Inadequate Infrastructural Facilities	6.	85.71
Inadequate Extension Agents	66	94.29
Complexity of the Technology	62	88.57
Language Barrier	51	72.86

Source: Field Survey, 2017

Socio-economic characteristics of cattle rearers

Table 1 shows the majorities (71.43%) were male. This implies that male predominated in dairy cattle production technologies in the study area. Also, most (78.57%) of the respondents were above 30 years of age, which implies that, they are adult who have more responsibilities and can take the cattle rearing business seriously in order to cater for their families. In the same vein, 64.29% of the respondents were married and have large family size (50%) of between 5 and above persons in their household. This could positively enhanced their occupation by having more family labour. This also agreed with the findings of Adidu (2010). Table 1 further showed that majority (57.14%) of the respondents have cattle rearing as their major occupation. This implies that the respondents might have experience in cattle rearing which could positively influence their adoption of dairy cattle production technologies in the study area. Similarly, 50% of the respondents had no formal education, while 50% of the respondents had varying level of education ranging from primary to tertiary education. The farmers were fairly educated; an educated person is expected to be more receptive to new technology since they are livelier to understand the scientific basis of agriculture and the superiority of improved technologies over their local practices (Idrisaet *al.*, 2008). (85.72%) of the cattle rearers in the study area depends solely on individual's advice and personal initiatives and not on extension service. This might negatively affect the adoption of dairy cattle

technologies by farmers in the study area hence extension agents are expected to teach and train the farmers on the best practices in the use of the dairy technologies. Also majority (57.14%) of the respondents depends on their personal savings for finance. This could negatively influence the use of dairy cattle technology in the study area hence most farmers may not afford the cost of the technology considering their meagre savings.

Dairy cattle production technologies available in the study area

Table 4.2 revealed the result of the dairy cattle production technologies available in the study area as: Artificial milking machine (5.71%), cross breeding (35.71%), artificial insemination (28.57%), improved breeds (11.43%) and improved ration (18.58%). This implies that, the main dairy technologies accessible to cattle rearers in the study area are: cross breeding, artificial insemination, improved ration and cross breeding.

Multiple regression results on influence of socio-economic characteristics on adoption of dairy cattle technologies

The result of the linear function shows that the coefficient of determination (R^2) was 64%. This shows that 64% of the variation in the respondents adoption of dairy cattle production technologies is explained by the independent variable $X_1 - X_5$, while the remaining 36% of the variation in the dependent variable (Y), was due to some other variables were not included in the regression model. The coefficient of sex (x_1), age (x_2) and marital status (x_3) were positive and significant at 1%. This agreed with *a priori* expectation indicating that a unit increase in any of these variables holding others constant will lead to a unit increase in the gross output. In the same vein, the regression results on the influence of education (x_4) on farmer's adoption of dairy cattle production shows positive and significant relationship at 5% level. These confirm with *a priori* expectations that educated farmers tend to be more informed, knowledgeable and receptive in the adoption of innovation. Farming experience variable (x_5) was also observed to be positively related with the adoption of dairy cattle production technologies. This implies that the more the years of experience of a farmer the greater his management capability of the technology for improved productivity.

Cattle rearers' level of adoption of dairy cattle production technology

The result in the table 4.4 indicated that, artificial milking machine and insemination are the dairy cattle production technologies that were moderately used by the respondents in the study area. The moderate use of these technologies could be attributed to inadequate to access these technologies hence they are costly and most of these cattle rearers depends on their personal savings. The result also showed that, cross breeding improved ration were the highly adopted dairy cattle production technologies in the study. This may be attributed to accessibility and affordability of these technologies by cattle rearers in the study area.

Constraint affecting the adoption of dairy cattle technology

From table 4.5 the results show that the problems affecting the adoption of dairy cattle technologies were inadequate funds (100%) high cost of the technology (92.86%) inaccessibility of technology (82.86%), lack of awareness (78.57%) inadequate infrastructural facilities (85.71%) and language barrier (72.86%). This implies that the major that the major socioeconomic factors confronting the adoption of dairy cattle production technologies in the study area were: inadequate funds, high cost of the technology, inadequate extension agent's inadequate infrastructural facilities and inaccessibility of the technology. It is believed that most of those problems will be tackled if adequate funds are made available to the farmers in the study area.

Conclusion and Recommendation

Based on the major findings of this study it is concluded that inadequate fund, high cost of dairy cattle technology, inadequate infrastructural facilities and inadequate extension agents are the major socio-economic factors affecting the adoption of dairy cattle production technologies in the study area. It is also discovered that, the socio-economic characteristics of the respondents namely: sex, age, marital status, education and years of farming experience have positive and significant relationship with the adoption of dairy cattle production technologies Viz: cross breeding, artificial insemination, improved breeds and improved ration in the study area.

Based on the findings, the following recommendations were made:

- I. Formation of cooperative groups should be encouraged to enable farmers procure and own the dairy cattle technologies jointly.
- II. Effort should be geared toward increasing the awareness of the technologies within the study area so as to increase adoption.
- III. Government and other formal institutions should provide credit facilities to dairy cattle farmers to help them adopt the technologies in the study area.

Reference

- Adidu, S.A (2010) Economic Analysis of Cattle Fattening in Mubi North and South Local Government Areas of Adamawa State. Unpublished M.Sc. Thesis, Submitted to the Department of Agricultural Economics and Extension, Federal University of Technology Yola.
- CBN (2000) Central Bank of Nigeria, Annual reports and Statement of Account, 2000, Abuja Nigeria.
- FAO (2009) Food and Agricultural Organization. Food Productions Year Book Vol. 45, FAO, and Rome, Italy.
- Idris, Y.L; and Ogunbameru, B.O. (2008) Farmers' Assessment of the Unified Agricultural Extension Service in Borno State, Nigeria, *Journal of Agricultural Extension*, (11): 106114.
- Okuneye, B. (2002) Livestock Sub- sector in Nigeria.Challenges and Prospects. In *Diversification of the Nigerian Economy: Policies and Programmes for Increasing Agricultural Output*, Mordi, C.N.O; O.J. Nnenna, G.E. Ukpang, and A. Adepagba (Eds). Central Bank of Nigeria, *Billion* 26(3): 16-22.