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Resource Use Efficiency in Millet (PennisatumglaucumSpp) Production in Some Selected Local Government Areas of Kano State

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Abstract

In line with global need to promote Agricultural productivity and efficiency; food security, this study examines Resource Use Efficiency on Millet (PennisatumglaucumSpp) Production in Kura, Makoda and Gaya Local Government Areas, Kano State. The study investigated the performance of producers, processors, marketers and consumers on value chain in Kano State. Structured questionnaire was used and a multi-stage random sampling was employed. The study utilized 260 participants as sampling frame out of which a sample size of 175 participants were extracted: 41 producers, 38 marketers, 48 processors and 48 consumers. The Data was analysed using ordinary least square and hedonic price techniques. The descriptive statistics indicated that the socio-economic features of the participants substantially add to the value of millet; as 85.4% male producers, 97.4% male marketers, 35.4%male processors and 64.6% male consumers which shows that millet producers, marketers, processors and consumers are predominantly male. The findings of the study also revealed that allocative efficiency was producers (1.09%),processors(0.49%) and marketers(0.47% while technical efficiency was producers (0.51%), processors(0.46%)and marketers(0.54%) and economic efficiency was producers(0.76%), processors(0.44%)and marketers(0.44%, thus for all the participants was positive and significant in influencing the millet value chain. The study further recognized access to finance (22.86%), poor road network (18.85%), proximity to customer (19.14%), insufficient pesticides and insecticides (20.14%), insufficient fertilizer (11.43%) as constrains for millet production, marketing and processing in Kano state. The study suggested that policy makers should design policies aimed at improving and providing rural infrastructures, such as good road networks, electricity and hospital facilities. There is also need for initiation of improved research and development to enhance millet production, processing and marketing. There is need for private sector participation so as to boost agricultural activities especially in the non-metropolitan local government areas of Kano state.

Keywords: Resource Use Efficiency, Socioeconomic, OLS, Hedonic Price Technique, Kano State, Nigeria

1. INTRODUCTION

In Nigeria, more than 70% of the population works in agriculture (NBS, 2013). Commercialization at the small, medium, and large-scale firm levels is transforming the sector (Olomola, 2007). The agricultural industry is thought to provide Nigeria's best chance of overcoming its current economic challenges. According to statistics, in 2014, over 34 million hectares of Nigeria's total 92 million hectare land area, or 37.3 percent of the cultivable area, were under cultivation. Major crops cultivated in the

country are cereals, example wheat, sorghum, millet and rice (FAO, 2014). Millets are small-seeded grasses that are hardy and grow well in dry zones as rain-fed crops, under marginal conditions of soil fertility and moisture. It can grow, mature and become ready for harvest in as little as 65 days. Millets can be kept for two or more years (Centre for Advanced Research and Development, 2015). According to Abba (2009), one of the value chain's coordinated systems is the continuum that production and marketing form; as a result, a lack of development in either one hinders advancement in the other. A new concept called a value chain examines the intricate web of actions taken by different parties (including farmers, processors, marketers, consumers, and service providers) to supply credit and raw materials down a chain to the final consumer. With an average annual millet production of 4.8 million tons, Nigeria is a significant millet producer (NBS, 2013). In terms of millet output worldwide, it comes in second to India. The value chain can be used to evaluate the role of upgrading within the chain; this may involve enhancing product quality and design or expanding the types of products offered.

Some identified causes, such as natural calamities like insecurity, drought, rapid population increase, ineffective use of available farm resources, and the incorrect choice of farming method, can be linked to the food scarcity in Nigeria and Kano state in particular. The main obstacles to improved food production in Nigeria are inefficient resource usage and the inappropriate choice of agricultural scheme. Additionally, the production of millet, a cost-effective food source for the average person as well as a vital ingredient in the pharmaceutical industry, is undergoing changes in its consumption patterns, which have an impact on the level of profit in a number of Kano State's local government areas. Another issue is the current mismatch between millet supply and demand in Kano State, which is the result of insurgency in the country's north-eastern region and an influx of residents there. The circumstance left the millet supply considerably behind the demand, increased both the demand and the price of millet, and significantly decreased the millet production's profit margin. In light of this, the study's goal is to determine how technical, organizational, and financial efficiency affect millet production in order to make informed recommendations that could increase millet production and, by extension, food production in Kano State and Nigeria.

2. LITERATURE REVIEW

The linkage between resource use efficiency and agricultural productivity and profitability has been studied in the literature. Abdulai and Huffman (2000) argued that agricultural productivity profit is related to efficiency and expansion. An essential aspect of agriculture is the farmer's age because it may have an impact on the degree of productivity at the farm level (Nganga et al., 2010). The education level of the farmer also has an impact on profit efficiency. This is due to the fact that efficiency in agriculture production, specifically in terms of quality and quantity, rapid adoption of new technology and rationalization of input may increase the output, boost volume of sales as well as profit margin. Education is a form of human capital that increases productivity (Lockheed at al., 1980). According to Nganga (2010) farm size, age of the farmer, years of experience and education level significantly affect agricultural productivity and inefficiency.

Agriculture productivity and profitability are influenced by the level of education (Wilson et al., 1998). Furthermore, Rahman (2002) discovered that farmers with more experience in the business generate higher amounts of profit and access to

extension services serves as a conduit for teaching farmers new technology. In a study on the use of data envelopment analysis (DEA) for technical efficiency of smallholder pearl millet farmers in Kano State, Mukhtar, Mohamed, Shamsuddin, and Iliyasu (2018) investigated 256 farmers in the 2013 – 2014 crop production season using Ordinary Least Square (OLS) model. The study found that, technical efficiency has positive and significant effect on agricultural productivity. Additionally, Umar, Zainalabidin, Shamsuddin, and Sharifuddin (2017) conducted a study titled Impact of Inputs' vcq Costs on Farm Profitability: An Evaluation of Pearl Millet Production in North-Western Nigeria. The study found that average variable cost (AVC) each season per hectare for the production of pearl millet in northwest Nigeria was $73,392, or 87.42 percent of the overall expenditures. The study also showed that the average annual revenue per hectare for pearl production in the study area was 148, 237. The findings indicated that average total costs were lower than average revenues, indicating that farmers in the research area were able to recoup their entire total expenditures (variable and fixed costs). This suggests that growing pearl millet is a lucrative business in the research area. Therefore, the study further showed that investing in a pearl millet business will result in higher returns for the farmers in northwest Nigeria. Amadu (2016) studied Profits and Efficiency along Pearl Millet Market Chain in Gusau Local Government, Zamfara State, Nigeria: A Value Addition Approach. The data was analysed using value addition technique and multiple regression models. The research found that processors enjoyed higher returns on participation than producers and merchants. The effectiveness of the millet market channel was positively impacted by the education level of the participants. In another study, Olugbenga, Lawal, and Awoyinka (2016) investigated the supply function for millet (PennisatumglaucumSpp) Kaduna and Kano states. The study found that millet supply variance in Kaduna and Kano States was explained by the price of fertilizer, the cost of production, and the amount of rainfall at 1% and 5% level respectively. Macroeconomic factors, such as exchange rates and food import policies had a large and considerable influence on the production of grains while farmers are less responsive to price.

3. METHODOLOGY

The local government areas of Kura, Makoda and Gaya in Kano State, Nigeria, will host the study. Kano State is located at latitudes 10.25°N and 13.53°N, and 7.40°E and 10.53°E, respectively. Olofin and Tanko (2002) estimate the state's elevation at 472.45 meters above sea level. The state has a total land area of 20,760 square kilometers. The Kano region has a flat to slightly undulating landscape and is located in the western African plains. A monomial rainfall pattern with an average range of 500 to 1000 mm per year defines the environment. The growing season lasts 90 to 165 days, with the majority of the rain falling between May and September. During the rainy season, air humidity is high, while during the dry season, it is relatively low. According to Olofin (2015), the average daily high and low temperatures are respectively 91.6°F (33.1°C) and 60.6°F (15.85°C). According to a Federal Republic of Nigeria official gazette from 2007, the State has a population of 9, 383, 682, 000 based on the 2006 census (NPC 2006). Kano State Agriculture and Rural Development Authority [KNARDA] (2008) classified the state into three agricultural zones which includes: Zone I comprises of fourteen (14) local government areas including Bebeji, Kibiya, Kiru, Kumbotso, Kura, Madobi, Rogo, Rano, Tudunwada, Karaye, Doguwa, Kabo, Bunkure and Garun Malam.

Kura Local Government Area was purposefully selected in this Zone. Zone II comprises of Thirteen (13) Local Government Areas including Bagwai, Bichi, Dawakin Tofa, Dambatta, Gwarzo, Makoda, Minjibir, Kunchi, Rimin Gado, Shanono, Tofa, Tsanyawa and Ungogo. Makoda Local Government Area was purposefully selected in this Zone. Zone III comprises of seventeen (17) Local Government Area including, Ajingi, Albasu, Dala, Dawakin Kudu, Fagge, Gaya, Gabasawa, Garko, Gezawa, Gwale, Kano Municipal, Nassarawa, Tarauni, Takai, Sumaila, Warara and Wudil. Gaya Local Government Area was purposefully selected in this Zone.

The study used a multistage sampling strategy to obtain data. The first stage involves purposive selection of one Local Government Area (LGA) from each of the three agricultural zones in the State. The LGA's selected are Kura in Zone I, Makoda in Zone II and Gaya in Zone III based on the intensity and concentration of millet production in the study areas. The second stage involved purposive selection of two wards from each of the selected Local Government Areas based on the intensity and concentration of millet farmers; Kura, Yadakwari, Makoda, Mai Tsidau, Gaya and Kademi were selected for the study. To achieve a random selection of these villages, a comprehensive list of the villages was obtained from Kano State Agricultural and Rural Development Authority (KNARDA). The villages were listed serially; numbers were picked from the table of random numbers and for each random number picked the last three digits of the random number were considered. The third stage involves simple random selection of participants from a list of registered members with KNARDA. The Descriptive statistics, the Logit Regression Model, the Stochastic Frontier Model, the Gross Margin Analysis, and the Hedonic Price Model are employed to analyze the research data.

3.1 Models of Analysis

In order to examine the effect of resource use efficiency in millet production, a modified model by Adedeji, et al. (2015) was used as stated in the following equation:

$$LnY_i = f(X_i \beta_i) + V_i - U_i$$

Where:

Y_i = the output of i^{th} farm

f = functional relationship

X_i = the vector of input quantities of the i^{th} farm

β_i = the vectors of unknown parameters

V_i = account for the random factor, such as measurement error, risks and weather etc.

U_i = account for technical inefficiency.

Technical Efficiency

$$TE = Y/Y^*$$

$$TE = \beta_0+\beta_1x_1+V -U/ \beta_0+ \beta 1x1 + V \quad \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots (1)$$

Allocative Efficiency

Allocative efficiency deals with the extent to which farmers make efficient decisions by using inputs up to the level at which their marginal contribution to production value is equal to the factor cost. Technical and allocative efficiencies are components of economic efficiency.

Economic efficiency

$$EE = TE^* AE \quad \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots (2)$$

Hedonic Price Model

The Hedonic Price Analysis Model is mathematically expressed as:

$$Pm = b0 + b1x1 = b2x2 + b3x3 + b4x4 + b5x5 + U \ldots\ldots\ldots\ldots\ldots (3)$$

1. RESULTS

Results in Table 4.1 indicated that millet production in the study area is male dominated, this can be seen as 85.4% of the total millet producer participants were male while only 14.5% were female. The result also indicated that millet marketing in the study area is male dominated as 97.4% of the total millet marketer respondents are male while only 2.6% were female. This reflects the responsibility of catering for the need of the family by the female, which is also a reflection of religion, tradition, culture and norms of the people in the study area. The results also indicated that millet processing in the study area was dominated by female as shown by 77.1% of the total millet processors that participated are female while 22.9% were male. The majority of the millet consumers in the study area are male with 85.4% of the total participants in the study area and 14.6% of the participants were female. This is reflected in the fact that male shoulder the responsibility of catering for the needs of the family which is also a reflection of religion, tradition, culture and norms of the people in the study area because women are more indoor than men. This impliedly indicates that purchases of millet for consumption were done by the male.

Furthermore the result shows that most of the millet producers were married (78.0%) while only 9.8% of the millet producers were single, 2.4% were divorced and 9.8% were widow. More so, (73.3%) of the millet marketers were married. The results also shows that majority of the millet processors were married (77.1%) while 10.4% of processors were single and 12.5% were divorced. Similarly, the result indicated that (77.1%) of the consumers were married while only (10.4%) of the consumers were single and (12.5%) were divorcee.

The results further indicated that 2.4% of the millet producers have never been to school, 17.1% acquired only religious education, and 4.9% acquired primary education while 75.6% acquired secondary and tertiary education. The result also shows that 15.8% of the millet marketers acquired primary education, 76.3% acquired secondary and tertiary education while 7.9% have religious education respectively. The result presented in the table also shows that 8.3% of the millet processors have never been to school, 35.4% acquired only religious education, and 56.3% acquired secondary and tertiary education. This low level of western education of the millet processors makes it difficult for the processors to acquire modern techniques of processing the millet, which is in line with the findings of; Barrett and Aboud, (2002), that formal education may enhance or at least signify latent managerial ability and greater cognitive capacity in the acquisition of new technology. The result also shows that 8.3% of the consumers have never been to school, 56.3% acquired secondary and tertiary education, 35.4% acquired only the Islamic education.

Table 4.1: Socioeconomic Characteristics of the Millet Producers, Marketers, Processors and Consumers in Selected LGAs of Kano State

Variable	Producers		Marketers		Processors		Consumers	
	Frequency n=41	%	Frequency n=38	%	Frequency n=48	%	Frequency n=48	%
Sex								
Male	35	85.4	37	97.4	11	22.9	41	85.4
Female	6	14.5	1	2.6	37	77.1	7	14.6
Marital status								
Single	4	9.8	7	18.4	5	10.4	5	10.4
Married	32	78	28	73.7	37	77.1	37	77.1
Divorcee	1	2.4	3	7.9	6	12.5	6	12.5
Widow	4	9.8						
Educational status								
Never been to school	1	2.4			4	8.3	4	8.3
Religious	7	17.1	3	7.9	17	35.4	17	35.4
Primary education	2	4.9	6	15.8				
Secondary and tertiary	31	75.6	29	76.3	27	56.3	27	56.3

Source: SPSS Estimation, 2022

The results in Table 4.2 revealed that the minimum age of the millet producers is 20 years while the maximum is 65 years. The average age of the farmers is 42 years, which shows that most of the millet producers in the study area are young, strong and active age group. The maximum age of the millet producers is 65years which means that those of this age are getting older, hence, becoming dependents on the young and active in the society. In the same vein, the minimum age of the millet marketers is 20 years and the maximum is 60 years while the average age of the marketers is 30 years which is believed to be active age group. The result shows that most of the millet marketers in the study area are young, strong and active. The results also revealed that the minimum age of the millet processors is 20 years and the maximum is 65 years while the average age of the processors is 41 years which believed to be active age group. The result further shows that most of the millet processors in the study area are young, strong and active. Furthermore, the minimum age of the consumers is 20 years and the maximum is 65 years while the average age of the consumers is 32 years which is believed to be active in socio-economic activities. This implies that most of the consumers in the study area are very young, strong and active.

In addition, Table 4.2 revealed that the millet producers with minimum family members are 2 persons per family and those with maximum family members are 23 persons per family. Further, the mean household size was 14 persons. In the same vein, the millet marketers with minimum family members is 1 person per family and those with a maximum family size are 22 persons per family respectively. Further, the mean household size was 10 persons. It also revealed that the processors that have a minimum family members of 2 persons per family and those with a maximum family size of 23 persons per family respectively. The mean household size was 12 persons. This implied that, the production cost was less since the labour (man-day) to be employed was less as such profit was maximized. The results also revealed that consumers that have a minimum family members of 2 persons per family and those with a maximum family size of 21 persons per family. The mean household size was 11 persons. The average family size of producers, processors, marketers and consumers respectively is higher than the national average family size of 5 persons per family (NBS, 2002). This implied that purchases increases in the study area which led to increased production and revenue.

The results in Table 4.2 further revealed that the mean or average farming experience of millet farmer in the study area is 11 years, while the minimum years is

7years and the maximum is 23years.It also revealed that the mean or average years of experience of the millet marketers is 7years while the minimum years is 1year and the maximum years of experience was 23years.The results also revealed that the mean or average years of experience of the millet processors is 11 years while the minimum years is 6years and the maximum years of experience is 22 years.

The result in Table 4.2 also revealed that the mean farm size in the study area is 1.1 hectares, millet producers that have a minimum farm size of 0.1 hectare are 17.07%, the maximum farm size of 2.5 hectares are 12.20%. The result showed that 100% of the total millet farmers are small farm holders with farm sizes that are slightly above average (1.1 hectares), who produces mainly for sale and consumption. This implies underutilization of the farm land in the study area.

Table 4.2: Socioeconomic Characteristics of Millet Producers, Marketers, Processors and Consumers in Selected Local Government Areas in Kano State

Variable	Producers Frequency n=41	%	Marketers Frequency n=38	%	Processors Frequency n=48	%	Consumers Frequency n=48	%
Age (years)								
20-29	9	21.95	10	26.32	14	29.17	22	45.8
30-39	11	26.84	17	44.73	11	22.92	19	39.6
40-49	9	21.95	4	10.53	9	18.75	4	8.3
50-59	6	14.63	4	10.53	7	14.58	2	4.2
60 -69	6	14.63	3	7.89	7	14.58	1	2.1
Minimum	20	100	20	100	20	100	20	100
Maximum	65		60		65		65	
Mean	41.87		37.39		40.75		32.21	
S.D	13.44		11.9		14.09		9.18	
Household size(number)								
1-5	5	12.20	13	34.21	9	18.75	17	35.42
6-10	9	21.95	9	23.68	11	22.92	11	22.92
11-15	9	21.95	9	23.68	12	25	5	10.42
16-20	7	17.07	4	10.53	9	18.75	5	10.42
21-25	11	26.83	3	7.90	7	14.58	10	20.83
Minimum	2	100	1	100	2	100	2	100
Maximum	23		22		23		21	
Mean	14.22		9.71		12.38		10.92	
S.D	6.88		6.31		6.58		7.76	
Years of experience (years)								
1-5	9	21.9	23	60.53	10	20.83		
6-10	7	17.07	8	21.06	11	22.96		
11-15	17	41.49	2	5.26	16	33.33		
16-20	5	12.20	3	7.89	7	14.58		
21-25	3	7.34	2	5.26	4	8.3		
Minimum	6	100	1	100	6	100		
Maximum	23		23		22			
Mean	11.29		6.82		11.33			
S,D	5.8		5.9		5.98			
Farm size (hectares)								
0.1-0.58	7	17.07						
0.59-1.07	17	41.49						
1.08-1.56	9	21.9						
1.57-2.05	3	7.34						
2.06-2.54	5	12.20						
Minimum	0.1	100						
Maximum	2.5							
Mean	1.1							
S.D	0.6							

Source: SPSS Estimation, 2022

Estimates of individual technical efficiency scores of the millet farmers in table 4.3 revealed a mean of 0.51, 0.46 and 0.54 for producers, processors and marketers respectively. This suggests that, millet producers, processors and marketers in the study area exhibit 51%, 46% and 54% level of output efficiency. The implication is that, about 49%, of output is lost due to both technical and allocative inefficiency while 54%

of the processed products and 46% sales are lost due to technical and allocative inefficiency in processing and marketing respectively. The result further suggests that the output level could be increased by 49%, processed products by 54% and marketing efficiency by 46% without any adjustments in the input mix and production technology.

Table 4.3: Technical efficiency of Millet Production, Processing and Marketing in selected LGAs of Kano State

	Technical Eff.		
	Producers	Processors	Marketers
Efficiency Range	F (%)	F (%)	F (%)
< 0.10	4(9.76)	3(6.25)	4(10.52)
0.11-0.20	6(14.63)	9(18.75)	…….
0.21-0.30	9(21.95)	12(25.00)	6(15.79)
0.31-0.40	12(29.27)	4(8.33)	5(13.16)
0.41-0.50	7(17.07)	7(14.58)	10(26.32)
0.51-0.60	…….	6(12.50)	4(10.52)
0.61-0.70	1(2.44)	…….	…….
0.71-0.80	…….	…….	3(7.90)
0.81-0.90	…….	…….	1(2.63)
0.91-1.00	2(4.88)	7(14.58)	4(10.52)
1.01-1.10	…..	…….	…….
Total	41(100)	48(100)	38(100)
Maximum	0.97	0.91	0.99
Minimum	0.04	0.01	0.09
Mean	0.51	0.46	0.54

Source: SPSS Estimation, 2022

The results in Table 4.4 revealed a mean allocative efficiency of 1.09 which implies that an average millet producer in the study area spends about 9% above as the minimum cost of production. The allocative efficiency could therefore be increased by 9% through efficient cost allocation of resources given the current state of technology.

Table 4.4: Allocative Efficiency of Millet Production, Processing and Marketing in Selected LGAs of Kano State

	Allocative Eff.		
	Producers	Processors	Marketers
Efficiency Range	F (%)	F (%)	F (%)
< 0.10	…….	4(8.33)	5(13.16)
0.11-0.20	…….	…….	…….
0.21-0.30	…….	5(10.42)	…….
0.31-0.40	10(24.39)	16(33.33)	…….
0.41-0.50	6(14.63)	7(14.58)	12(31.58)
0.51-0.60	15(38.59)	2(4.17)	10(26.32)
0.61-0.70	8(19.51)	…….	3(7.90)
0.71-0.80	…….	9(18.75)	4(10.52)
0.81-0.90	…….	…….	…….
0.91-1.00	…….	5(10.42)	4(10.52)
1.01-1.10	2(4.88)	…….	…….
Total	41(100)	48(100)	38(100)
Maximum	1.03	0.95	0.91
Minimum	0.39	0.02	0.02
Mean	1.09	0.49	0.47

Source: SPSS Estimation, 2022

The mean economic efficiency was reported in Table 4.5 below as 0.76, 0.44 and 0.44 for the producers, processors and marketers respectively. This implies that, the producers in the study area exhibit an average of 76% level of economic efficiency while processors and marketers respectively exhibit an average of 44% level of economic efficiency. Thus, the economic efficiency could be increased by 34% and 66% for producers, processors and marketers respectively when technical and allocative efficiency are at optimum level.

Table 4.5: Economic efficiency of Millet production, processing and marketing in selected LGAs of Kano State

	Economic Efficiency.		
	Producers	Processors	Marketers
Efficiency Range	F (%)	F (%)	F (%)
< 0.10			
0.11-0.20	3(7.31)	4(8.33)	12(31.58)
0.21-0.30	4(9.96)	…….	…….
0.31-0.40	6(14.63)	8(16.67)	…….
0.41-0.50	10(24.39)	14(29.17)	4(10.52)
0.51-0.60	14(34.15)	…….	6(15.79)
0.61-0.70	2(4.88)	5(10.42)	9(23.68)
0.71-0.80	2(4.88)	8(16.67)	4(10.52)
0.81-0.90	…….	6(12.50)	3(7.90)
0.91-1.00	…….	3(6.25)	
1.01-1.10	…….	…….	…….
Total	…….	…….	…….
Maximum	41(100)	48(100)	38(100)
Minimum	1.50	0.87	0.80
Mean	0.01	0.01	0.07
	0.76	0.44	0.44

Source: SPSS Estimation, 2022

The results of the analysis as presented in Table 4.6 below with price as dependent variable and millet characteristics as independent variables revealed that the intercept (constant) was statistically significant (P≤0.01) amounted to 36869, meaning that about ₦36,869 (Thirty Six thousand, eight hundred and sixty nine naira only) worth of millet could be bought by consumers without considering the variables of millet included in the model. Generally, consumers showed significant preference levels of location, colour, variety, finishing and weight of millet. The results of the estimated coefficient shows that the R^2 value of 0.1572 which means that 16 percent variations in the dependent variable (price of millets) was explained by the independent variables. Therefore, based on Cohen's classification of 0.26 R^2 value is substantial, 0.15 moderate and R^2 value of 0.02 as weak. The Durbin-Watson result indicates that there is no autocorrelation in the range of 1.5 to 2.5 (Hair, Black Babin, 2010). Also, because some of the variables are intrinsic and subjective, the 16% explained could be considered in a hedonic regression of this nature.

Table 4.6: Consumer Preference of Millet (Hedonic Price Analysis Model for Consumers of Millet) in selected LGAs of Kano State

VARIABLE	ESTIMATED COEFF.	T-RATIO	P-VALUE
CONSTANT (bo)	36869.	34.99	0.000
LOCATION (X1)			
GAYA	1149.8	1.569	0.120
MAKODA	-893.40	-0.9291	0.356
COLOUR (X2)			
Light green	472.17	0.9046	0.368
FINISHING (X3)			
Fine	220.66	0.3533	0.725
Not fine	-274.94	-0.4608	0.646
VARIETIES (X4)			
Pearl	-46.507	-0.5485E-01	0.956
WEIGHT (X5)	669.56	1.619	0.109
R-SQUARE = 0.1572	**R-SQUARE ADJUSTED = 0.0870**		

Source: SPSS Estimation, 2022

2. CONCLUSION

The study empirically examines the influence of resource use efficiency on millet (PennisatumglaucumSpp) production in Kura, Makoda and Gaya LGAs of Kano State.

Structured questionnaire was used and a multi-stage random sampling was employed. The study utilized 260 participants as sampling frame out of which a sample size of 175 participants were extracted: 41 producers, 38 marketers, 48 processors and 48 consumers. The Data was analysed using ordinary least square and hedonic price techniques. The finding of the study reveals that technical, allocative and economic efficiency are positive and significant in influencing the millet value chain. The study further recognized access to finance, poor road network, proximity to customer, insufficient pesticides and insecticides, insufficient fertilizer as constrains for millet production, marketing and processing in Kano state. The study suggested that policy makers should design policies aimed at improving and providing rural infrastructures, such as good road networks, electricity and hospital facilities. There is the need for initiation of improved research and development to enhance millet production, processing and marketing. There is also the need for private sector participation so as to boost agricultural activities especially in the non-metropolitan local government areas of Kano state.

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