



Knowledge of the Potentials and Constraints in Kenaf Production among Farmers in Southwest Nigeria

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Abstract

The study was carried out in the South west Nigeria to assess farmers' knowledge of the potentials and constraints in kenaf production. Three states were selected for the study (Oyo, Ogun and Ekiti States) out of the six states in Southwest. Agricultural Development Programme (ADP) zones in each state were used and a multi-stage sampling technique was employed for the selection of farmers. Data were collected from 235 farmers across the 3 States using descriptive statistics such as mean, charts and percentages. The results show that more males (70.2%) were involved in the farming activities than female (29.8%), the mean age of the farmers was 48±22 years and the sources of agricultural information were mostly radio and extension agents (53.2% and 48.1% respectively). The results further revealed that none of the farmers interviewed cultivate kenaf. Farmers have little knowledge of the potentials of kenaf as 53.2% knows that the young kenaf plant can be eaten as vegetable while 38.30% and 22.13% know that fibre from kenaf can be used to make produce bag and extraction of oil for cooking respectively. Perceived constraints identified by farmers in kenaf cultivation are non familiarity with the crop ($x=1.92$), lack of adequate information about kenaf crop ($x=1.83$) and lack of knowledge on its utilization among others were ranked first, second and third respectively. It was therefore, recommended that sensitization programme be organized for farmers to bring relevant information and improve on extension coverage about the potentials of kenaf to the farmers in the south west Nigeria.

Keywords: Constraints, Kenaf potential, Knowledge, Production.

Introduction

Kenaf (*Hibiscus cannabinus L.*) is an annual fibre crop that originated in Central Africa. It is a warm season crop closely related to cotton (*Gossypium hirsutum L.*) and okra (*Abelmoschus esculentus L.*) (Amusat and Ademola, 2014). Kenaf is used as raw material in many industrial sectors, among which are building ceiling material, paper products, absorbents and livestock feed. Kenaf oil is another product which is important to manufacturing industries. The oil contains a lot of minerals and vitamin which are essential to man. The plants possess a wider range of adaptation to environments, climates, soils, and are rich sources of cellulose compared to any other fiber plant. Kenaf have a high quality cordage fiber which can be processed into a

variety of goods such as fiber and particle boards, fiber-reinforced plastic components, pulp and paper, chemical absorbents, and many others. (Saba *et al.*, 2015). Planting kenaf helps alleviate global warming by absorbing carbon dioxide gases (Charles *et al.*, 2002; Amusat and Ademola, 2014).

The recent change to the use of synthetic fiber like polyethylene and propylene from petrol chemicals for the packaging of agricultural products worldwide has brought a decline in the demand for natural fiber bio-degradable jute bags (Ernest *et al.*, 2007 ; Agbaje *et al.*, 2010). However, the extensive utilisation of petro-chemical resources and expansion of synthetic products market have caused increased deterioration of world

environment. Therefore, the use of naturally renewable materials are attracting more attentions from both developed and developing countries. Kenaf is among many naturally renewable materials, that have gained popularity in replacing synthetic and petro-chemical materials in Nigeria. It has been identified as a plant with numerous potentials that can revolutionize the packaging, pulp and paper, building and construction sub-sectors of the Nigeria economy (Mohd, *et al*, 2012). However, in order to accomplish this, proper processing that will ensure that the product meets domestic and international standards needs to be considered (Omena *et al.*, 2016).

In spite of the rising demand for kenaf in international market, production is still low in Nigeria. One of the major reasons for low production could be attributed to low awareness of the full potential of the crop as well as its economic benefits by farmers in Nigeria. Also, some of the farmers involved in kenaf production are still using old methods of retting (processing) which affect the quality of kenaf fibre. It is evident that if the full potentials of kenaf are fully explored, it can boost the economy and generate jobs for more Nigerians (Saka *et al*, 2007). This study therefore aimed at investigating farmers' knowledge of the potential of kenaf as well as their perceived constraints in its cultivation. The study also to examined the socio-economic characteristics of farmers, types of association they belong, their source of information, crop combination and cropping system, knowledge of the potential of kenaf crop and perceived constraints in kenaf production.

Methodology

The study was carried out in Oyo, Ogun, and Ekiti States of South western Nigeria.

Agricultural Development Programme (ADP) zones in each state was used as coverage area for the study. A multistage sampling technique was used, three (ADP) zones were randomly selected for the study out of the four agricultural zones in each state. Firstly, three (3) villages/communities were randomly selected from each zone and secondly, ten (10) farmers were randomly selected from each village/community to give a total sample frame of two hundred and seventy (270) farmers. Out of the 270 questionnaires administered in the three states, only 235 questionnaires were correctly filled and used for analysis.

Preliminary visits were conducted in collaboration with Agricultural Development Programme (ADP) staff in each state to identify communities/villages for the survey. Well-structured interview guide was used to elicit relevant information on socio economic characteristics of farmers, type of association and source of information, crop combination and cropping systems, knowledge of the potential of kenaf, and perceived constraints of farmers in the cultivation of kenaf. Data were analysed using frequency count, means, and percentages. Perceived constraint of farmers to kenaf cultivation was measured as major constraints, minor constraints and no constraints and this was assigned a measure of 3, 2, 1 respectively. The mean of each constraints was calculated and later ranked in descending order.

Results and Discussion

Socio- economic characteristics of the farmers

Tables 1a and 1b show the result of the socio economic characteristics of farmers. The

results show that majority (70.2%) were male while 29.8% were female. This indicates that more males were involved in farming activities in the sampled states. Majority (86%) were married while 1.3%, 7% and 5% were single, widowed/widower and divorced respectively. The mean age of the respondents was 48 years which is an indication that the respondents were still in their active age while the mean years of farming was 26 years. This result agreed with the findings of Adeoti (2014) and Tiku *et al*, (2018) that farming households have the opportunities to acquire knowledge

from the more experienced farmers than the younger ones. This shows that the farmers in the sampled states have sufficient experience in agriculture since an average farmer in the area had been farming for more than two decades. The major occupation of respondents was farming (90%) while artisans were about 7% and only 2% were engaged as civil servant. This is in line with the findings of Yusuf *et al*, (2015) that majority of rural populace in the Southwest are agrarian and high percentage were involved in agricultural activities.

Table 1a. Socio Economic Characteristics of Farmers (N = 235)

Characteristics	frequency	percentage
Gender		
Male	165	70.2
female	70	29.8
Marital status		
Married	203	86.4
Single	3	1.3
Widowed/widower	17	7.2
Divorced	12	5.1
Age group		
< 20 years	4	1.7
21 – 40	54	23.0
41 – 60	125	53.2
>60	52	22.1
Major occupation		
Farming	211	89.8
Civil servant	44	1.7
Artisan	16	6.8
Trading		1.7
Educational status		
Adult Education	20	8.5
Primary	131	55.7
Secondary	65	27.7
Tert. education	19	8.1
Source of capital (Personal saving)	235	100.0

Source : Field survey, 2017

Table 1b. Mean Values of Socio Economic Characteristics Across States

Variables	Mean Values	Standard Deviation
Age	48 years	11.73543
Years in farming	26 years	9.23722
Household size	7 members	3.43545
Size of farm (ha)	2.5 ha	4.38807
Average annual income (N)	₦359,938.46	

Source: Field survey, 2017

The educational status of the sampled farmers shows that about 56% had primary education while 28% had secondary education. The level of education is a veritable tool in the evaluation of alternative agricultural practices that could help in the adoption of some new technologies (Obisesan and Omonona, 2013). The mean farm size cultivated was 2.5 hectares which implies that the farmers operate at small scale level of production and the mean household size of the farmers was 7 members. This may be an advantage where family labour is required as this will help reduce cost of production. The source of capital is through personal savings while the average annual income of the farmers was N359,938.46.

Type of association and source of information

Table 2 shows the distribution of farmers on the type of association and sources of information. The results revealed that majority (84%) belong to one association/organization or another, 61% were members of farmers' association which may be a source of easy access to loan to members and also a source of information. However, some farmers were in one cooperative society or the other while about 12% belong to KEPPMAN (Kenaf

Production, Processing and Marketing Association of Nigeria). The few members that belong to this association might not be unconnected to the fact that they are conversant with the crop through technology promotion by the Institute of Agricultural Research and Training, Ibadan. Although, their involvement in Kenaf cultivation is still considered low to farmers. The Source of agricultural information was mostly through radio (53%) and extension agents (48%). This corroborate the findings of Amusat and Ademola, (2014) that farmers in the southwest received information mostly through radio and extension agents. The results further showed that majority of the farmers (66%) are indigenes while 34% were non-indigenes of the communities where their farmlands were located. Majority (58.3%) acquired their farm land through inheritance while others acquired theirs through lease (21%). 19% and 1.3% acquired through communal and rent method respectively.

Cropping systems adopted by farmers

Fig 1 shows the cropping systems adopted by farmers in the study area. It revealed that crops were grown under mixed cropping system by 81% of the farmers while 19.3% cultivated their crops mainly as sole crops.

Table 2. Distribution of Farmers by Type of Association and Source of Information

Variables	frequency	percentage
Member of association		
Yes	197	83.8
No	38	16.2
Type of association		
Cooperative society	41	17.4
Kenaf association	29	12.3
Farmer's association	143	60.9
Village association/coop soc.	22	9.4
Native of the village		
Yes	204	86.8
No	31	13.2
Source of Information*		
Extension Officers	113	48.1
Farmers' association	85	36.2
Radio	125	53.2
Television	38	16.2
Research Institute	50	21.3
Produce buyers	35	14.9
Method of land acquisition		
Inheritance	137	58.3
Leasehold	50	21.3
Rent	3	1.3
Communal land	45	19.1

Source : Field survey, 2017

*Multiple responses

Table 3. Prominent Crop Combinations among Farmers

Crop combinations*	Frequency	Percentage
Cassava, maize	217	92.3
Cassava, maize and cocoyam	103	43.8
Cocoa and plantain	48	20.4
Maize, pepper, vegetables	227	96.6
Cocoyam and cassava	185	78.7
Maize and yam	215	91.5
Tomato, yam, cassava, maize	233	99.1

Source : Field survey, 2017. *Multiple responses

Table 3 presents the prominent crop combination by farmers. In order of prominence, cassava and maize were the major crops combined with other food crops, 92.3% combined cassava and maize, and 97% combined maize, pepper and vegetables. Other prominent crop combinations in the study areas were cassava, maize, tomato, yam (99%), maize and yam (92%), cassava and cocoyam (79%) and combination of cocoa and plantain (20.4%). This may be necessary to avert the risk that may arise from sole/mono cropping, maximization of soil nutrient and also to increase production and income from combination of crops. Above all it can be deduced that the farmers are not into kenaf production since none of the farmers interviewed cultivated the crop.

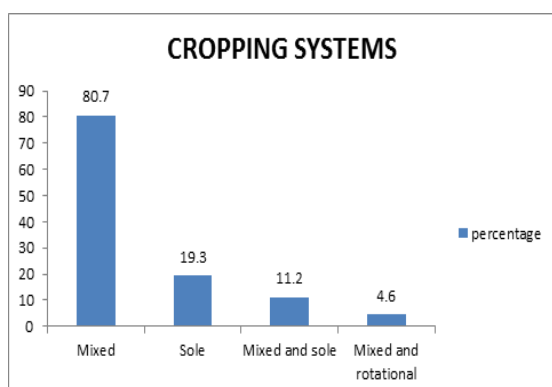


Fig 1. Cropping systems adopted by farmers

Knowledge of potential of kenaf crop by farmers

Table 4 shows the result of the knowledge of farmers on the potentials of kenaf crop. The result show that very few numbers of respondents that young kenaf plant can be eaten as vegetable (53.2%), that the fibre can be used to make produce bad (38.30%), can be used to make shoes (22.13%) and oil extracted from seed can be used for cooking

(21.23%) as these ranked 1st, 2nd, 3rd and 4th respectively. All the farmers interviewed do not know that kenaf core is part of the material used for dash board in cars; that Kenaf seed is used as part of livestock feed, that kenaf crop requires little or no chemical control during its life cycle and that kenaf can yield up to 4-5 tonnes of fibre per hectares. The results indicate that majority of the farmers interviewed have very little knowledge of the potentials of kenaf either through radio or television according to respondents submission and may also not know the economic importance of the crop. This can be a barrier to its cultivation because lack of adequate information on any crop or livestock entity can lead to low production of such crop or livestock and farmers are not ready to invest or go into the cultivation of any crop or livestock that will not give them maximum profit.

Perceived constraints of farmers in the cultivation of kenaf

Table 5 presents the results of the constraints in kenaf cultivation as perceived by farmers. Findings revealed that, non familiarity with the kenaf crop ($\bar{x} = 1.92$); Lack of adequate information about the crop ($\bar{x} = 1.89$) and lack of knowledge on its utilization ($\bar{x} = 1.83$) as these ranked 1st, 2nd and 3rd respectively. Other constraints identified are poor education/training on kenaf ($\bar{x} = 1.75$), no ready market for the produce ($\bar{x} = 1.73$), shortage of extension officers in disseminating information ($\bar{x} = 1.63$) and lack of good road ($\bar{x} = 1.57$), problem of land acquisition ($\bar{x} = 1.51$) and high cost of labour ($\bar{x} = 1.18$). In this study, labour may not really be a constraint because according to Usman *et al.*, (2012) increases in household size reduce the cost of hired labour.

Table 4. Knowledge of the potential of Kenaf

Potentials of kenaf	Yes (%)	No (%)	Mean	Rank
Young plant eaten as vegetable	125(53.2)	110(46.81)	1.59	1st
Kenaf fibre used as produce bag	90 (38.30)	145(61.70)	1.38	2nd
Kenaf fibre used to make shoes	52 (22.13)	183(77.87)	1.22	3rd
Oil extracted from seed used for cooking	50(21.23)	185 (78.72)	1.21	4th
Fibre used for POP	25 (10.64)	210(89.36)	1.11	5th
Fibre used for mat	24 (10.21)	211(89.79)	1.10	6th
Can be cultivated biannually	16(6.81)	219 (93.19)	1.07	7th
Core used as absorbent	15 (6.38)	220 (93.62)	1.06	8th
Requires average rainfall	12 (5.10)	223 (94.89)	1.05	9th
Kenaf matures in 3-4moths	11 (4.68)	224 (95.32)	1.03	10th
Fibre used to make carpet	10 (4.26)	225(95.74)	1.04	11th
Fibre used to make table mat	10 (4.26)	225 (95.74)	1.04	11th
Fibre used to make fashion accessories	10 (4.26)	225 (95.74)	1.04	11th
Fibre used as part of dashboard	-	235 (100.0)	1.00	12th
Kenaf requires little or no chemical control during its life cycle	-	235(100.0)	1.00	12th
Can yield 12-15 tonnes per hectares of fibre	-	235 (100.0)	1.00	12th

Source : Field Survey, 2017.

Table 5. Perceived Constraints in Kenaf Production

S/N	Constraints	Major Constraint	Minor Constraint	Not a Constraint	Mean (\bar{x})	Rank
1	Not familiar with kenaf crop	231(54.2)	3(1.3)	1(0.4)	1.92	1 st
2	Lack of adequate information/Awareness	205(87.2)	22(9.4)	8(3.4)	1.89	2 nd
3	Lack of knowledge on its utilization	218(92.8)	12(5.1)	5(2.1)	1.83	3 rd
4	Poor education/training on kenaf	88(37.4)	89(37.9)	58(24.7)	1.75	4 th
5	No ready market for the produce	233(99.2)	1(0.4)	1(0.4)	1.73	5 th
6	Shortage of extension officers in disseminating information	216(91.9)	52(22.1)	33(14.0)	1.63	6 th
7	Lack of good road	198(84.3)	101(43.0)	56(23.80)	1.57	7 th
8	Problem of acquiring land for farming	85(36.2)	97(41.3)	53(22.6)	1.51	8 th
9	The crop is not edible	232(98.7)	1(0.43)	2(0.85)	1.46	9 th
10	Sources capital affected the production of kenaf	23(9.8)	92(39.1)	120(52.1)	1.42	10 th
11	Poor provision of kenaf seeds	62(26.4)	105(44.7)	68(28.9)	1.38	11 th
12	Poor agricultural financing	214(91.1)	20(40.0)	1 (0.4)	1.29	12 th
13	Crop combination did not allow easy cultivation of kenaf	45(19.1)	85(36.2)	105(44.7)	1.23	13 th
14	Cropping pattern is inadequate	114(48.5)	67(28.5)	54(23.0)	1.21	14 th
15	High cost of labour	62(26.4)	78(33.2)	95(40.4)	1.18	15 th

Source: Field survey, 2017

Figures in parenthesis are percentages.

Conclusion

The mean age of farmers in the study area was 48 years considered to be their active age. The major sources of information on Kenaf value chain were through radio and extension agents. Majority of the farmers belong to one association/organization or another having primary education and 26 years farming experience. But these farmers serving as respondents have little or no knowledge on kenaf cultivation. However, they all indicated interest to be trained on kenaf production and processing. The constraints identified in this study depict that farmers are less accessible to adequate information on the crop in the area of the production, processing and utilization.

Recommendation

It was therefore recommended that, sensitization programmes be organized for farmers to popularize the crop, its potentials value chain and its economic importance through different medium, which require intensive efforts of Extension agents. Government intervention in the supply of inputs like improved kenaf seeds, fertilizer, agro-chemicals for kenaf cultivation, processing machine, retting materials among many others at subsidized rate, will encourage more farmers to go into its production, processing and utilization.

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