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Assessment of Land Availability and Suitability for Lowland Tea Cultivation in Cross River State, Nigeria

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ABSTRACT

The supply of tea from Mambilla Plateau is inadequate to meet local need. The available alternative is to find other lowland ecological areas of Nigeria for tea cultivation. This study therefore examined land availability and its sustainability for lowland tea cultivation in a typical lowland area. The study was carried out in Cross River State Nigeria. One hundred farmers' information was described using percentage and data analysed using correlation analysis. The mean age of the farmers was 44±14years. 60% of the respondents were males and majority (84%) were married. Majority (89%) of the farmers do not have disputes on their farmland. This is a good factor in enhancing the production of lowland tea in the study area. The correlation analysis revealed a significant relationship between land ownership and gender ($t \leq 0.05$). 54% of the farmers had farmlands that had gentle or and flat land topography. Also, 65% of the farm lands in the area had black coloured soil which indicates that the soils are fertile and are suitable for farming. Furthermore, 70% of the farmland had well drained soils. These physical soil attributes indicate that the soils are suitable for tea production. The substantial proportion of the land in the study area was inherited, hence it is possible for the farmers to hold the grip of the land to an extent. Land availability and its suitability for lowland tea cultivation will enhance emerging technologies in the production of tea.

Keywords: Lowland, production, Tea, technologies

INTRODUCTION

Camellia Sinensis (L) Kuntze was discovered in China in about 2700 B.C. Tea was discovered in South-East Asia perhaps in the province including the sources and high valleys of the Brahmaputra, the Irranwaddy, the Salween and the Mekong rivers at border separating India, China, and Burma. Tea is an evergreen bush which when cultivated is kept at a low height to enable the young branches from which tea is plucked. Presently, globally compared to other agricultural industries, the industrial tea industry has attained a huge degree of stability (Famaye, 2006).

The Nigerian Beverages Production Company (NBPC), Mambilla Plateau, introduced tea clones from Kenya into Nigeria for commercial planting in 1972 (Olaniyi *et al.*, 2014; Hainsworth 1981). The tea clones were later acquired by Cocoa Research Institute of Nigeria (CRIN) for research purposes in 1982 (Esan, 1982). In Nigeria, tea is exclusively grown in the humid, high altitude regions of Mambilla Plateau in Taraba State. The average yield of tea on commercial plots on the Mambilla is 1.5 t/ha (Chen *et al.*, 2012). At present, the supply of tea from these regions is inadequate to meet the demand of the local tea processing industries (Adeosun *et al.*, 2022; Olaniyi *et al.*, 2014; Obatolu and Ipinmoroti 2000). Indeed, less than 30% of the tea leaf raw material requirement of the local processing industries is met. However, the expansion of tea fields and the opening up of new areas to meet this supply shortfall has proven

difficult, because Mambilla Plateau, where most tea is cultivated, has limited land area available for commercial cultivation, and there are land use conflicts, including cattle grazing and industrial and residential purposes. The available alternative is therefore to test tea in the lowland ecological areas of Nigeria, where expanded tea cultivation might be possible. Tea production can contribute immensely to food security and poverty alleviation in Nigeria if much attention is given to improvement.

In Cocoa Research Institute of Nigeria, efforts have so far been made to adapt tea to lowland areas of Nigeria viz-a-vis Ibadan (Oyo State), Ikom (Cross River Estate), Ikorodu (Lagos State) and Mayo-Selbe in (Taraba State) (Olaniyi *et al.*, 2014). Until recently too in Owena (Ondo state). Farmers in these locations have been involved in the cultivation of several crop enterprise (arable and tree crops). Even though the soils in these areas are suitable for lowland tea but are they available? This study will therefore examine land availability and its sustainability for lowland tea cultivation in Nigeria.

Objectives

The objectives of the study were to:

- (i) determine the land availability for lowland tea cultivation
- (ii) determine the land suitability for lowland tea cultivation

METHODOLOGY

The study was carried out in Cross River State of Nigeria. A multistage random sampling was used to select respondents for the study. The first stage is purposive selection of Cross River state. The second stage is the random selection of three Local Government Areas (LGAs) namely Boki, Etung and Obanliku. The third stage is the random selection of one community each from each LGA. The selected communities are Bashua from Boki LGA, Ajassor from Etung and Obudu Cattle Ranch from Obaliku LGA. One hundred and twenty questionnaires were distributed based on proportionate to size. After sorting out for missing data one hundred respondents' information were used for analysis. The data retrieved from the information collected were analysed with the use of descriptive statistics and correlation analysis.

RESULTS AND DISCUSSION

Table 1 presented the socio-economic characteristics of farmers in Cross River State. Six out of ten respondents were males. There were more male farmers in the study area compared to the female farmers. The mean age of the farmers was 44 years. Farmers in the study area were mostly middle aged and thus might be more willing to try out new innovations and techniques. They may also be willing to try out the planting of lowland tea on their farms. Majority of farmers in the study area were married. This means that they would have more persons in their households that could be used as family labour thus the cost of labour would drastically reduced.

Table 1: Socio economic characteristics of the farmers

Variable	Frequency (N=100)	Percentage
Gender		
Male	65	65.0
Female	35	35.0
Age		
< 30	19	19.0
31-60	69	69.0
>60	12	12.0
Mean 44±14		
Marital status		
Single	16	16.0
Married	84	84.0

Source: Field survey, 2023

Table 2 presented land availability for lowland tea cultivation. Eighty eight percent of the farmers inherited their farmland. This could serve as a hindrance to the adoption of lowland tea as they might want to continue with what their fathers have been planting on the farms. Also, on the other hand, most of these farms may have their nutrients depleted as a result of long years of usage thus if organic/inorganic fertilisers are not added to the soil this could cause the low output of tea thus hindering the total adoption of tea by the farmers. Majority (89%) of the farmers do not have disputes on their farmland. This is a good factor in enhancing the production of lowland tea in the study area. Farmers in the study area grow arable and tree crops on their farm. Twenty seven percent grow arable crops, 38% grow tree crops and 35% grow both. Ninety nine percent of the respondents affirmed that the crops they grow on their farmland are doing well and all the farmers agreed to the establishment of tea on their farm. This is good as it aligns with the plan of Cocoa Research Institute of Nigeria in establishing lowland tea in areas discovered to be suitable in which the study area is part of it. Fifty percent of the respondents agreed that they could use half of their farmlands to grow tea. Seven out of ten farmers agreed that their farms can be used as demonstration/model farms where other farmers can come to see how tea farm is established and maintained.

Table 2: Land availability for lowland tea cultivation

Variable	Freq. (N=100)	%
Land ownership		
Inherited	88	88.0
Purchased	12	12.0
Dispute on land		
Yes	11	11.0
No	89	89.0
Crops grown on farmland		
Arable crops	27	27.0
Tree crops	38	38.0
Both	35	35.0
Are the crops doing well?		
Yes	94	94.0
No	6	6.0
Can you plant tea on your land?		
Yes	100	100.0
What proportion can you use for tea cultivation		
25%	9	9.0
50%	50	50.0
100%	41	41.0
Can you allow other farmers to have access to your after tea establishment?		
Yes	78	78.0
No	22	22.0

Source: Field Survey, 2023

Land suitability for tea establishment is as shown in table 3. Fifty four percent of the farmers had farmlands that had gentle/flat land topography. This kind of farmland is suitable for farming. Also 65% of the farms had black coloured soil which showed that the soils are fertile. Twenty two percent of the farms had red soil which could be clayey soils and may not be good for tea production. Hence, the substantial proportion of the land is suitable for tea cropping being having black coloured soils. Furthermore 70% of the farmland had well drained soils which are suitable for tea production.

Table 3: Land Suitability for Tea Establishment

Variable	Freq. (N=100)	%
Gradient of the land		
Slopy	18	18.0
Gentle/flat	58	54.0
Gently slopy	24	24.0
Type of weed on farmland		
Narrow leaved	31	31.0
Broad leaved	15	15.0
Both narrow and broad leaved	54	54.0
Land soil colour		
Black	65	65.0
Red	22	22.0
Grey	5	5.0
Brown	8	8.0
Nature of soil		
Marshy	20	20.0
Well drained	70	70.0
Sticky	10	10.0

Source: Field Survey, 2023

Relationship between land ownership and socio-economic parameters

Table 4 and 5 presented the result of correlation analysis which shows the relationship between land ownership and socio economic parameters

Tables 4 shows the relationship between land ownership and gender. The result showed that there was a significant relationship between land ownership and gender ($\ell \leq 0.05$). The relationship is expected because more male farmers inherit land compared to their women counterparts. What the women do in most cases is to buy land for their farming activities.

The finding fall in-line with the patriarchy system in Nigeria where men have the final say. The study area, that is, Cross River State is not an exception, hence, the women there too do not inherit land.

Table 5 shows the relationship between land ownership and age of the farmer. The result showed that there was no significant relationship between land ownership and age of farmer ($\ell > 0.1$). Hence, land ownership is independent of the age of farmer, whether old or young, so far that he is a male child. The implication of this is that more youths will be more gainfully involved in farming without any hindrance regarding the ownership of land.

Table 4: Landownership by Gender

Variable	Gender		Total
	Male	Female	
Inherited	60(0.1)	28 (90.3)	88 (0.4)
Purchased	5(1.0)	7 (1.9)	12 (2.9)
Total	65 (1.1)	35(2.1)	

Source: Field Survey, 2023

Pearson $\chi^2(1) = 3.26$ Pr= 0.07

Table 5: Landownership by Age

Landownership	Age		
	<30	31-60	>60
Inherited	15(0.2)	61 (0.0)	12 (0.2)
Purchased	4(1.3)	8(0.0)	0(1.4)
Total	19(1.5)	69(0.0)	12 (1.6)
Total	65 (1.1)	35(2.1)	

Source: Field Survey, 2023

Pearson $\chi^2(1) = 3.12$ Pr= 0.210

CONCLUSION AND RECOMMENDATION

The substantial proportion of the land in the study area was inherited, hence it is possible for the farmers to hold the grip of the land to an extent. Also majority of the farmers are ready to make their land available for the cultivation of tea. As regards the suitability of the land for tea cultivation, it was discovered that the land is suitable for the cropping especially when parameters such as gradient, soil colour and nature of the soil are considered. Also, it is concluded that there is a significant relationship between land ownership and gender. Land availability and its suitability for lowland tea cultivation will enhance emerging technologies in the production of tea.

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