

## **Income Benefits of Moringa vis-à-vis Other Leafy Vegetables to Female Traders in Jalingo Markets, Taraba State, Nigeria**

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**Abstract:** This study compared the financial benefits of female traders obtained from *Moringa oleifera* with that from other leafy vegetables in Jalingo Local Government Area markets. It also identified challenges of trade in *Moringa* leaves in the area. Data collected from 120 respondents through a semi-structured questionnaire were analyzed using Prioritization matrix, Gross Margin (GM) analysis, and ANOVA. Daily mean Gross Income (GI) from *Moringa* leaves (NGN1127.84) and *Amaranthus* (NGN503.84) ranked first and second respectively with scores of 16 and 12. Sorrel leaves (NGN367.80) and *Ceratotheca* leaves (NGN380.42) ranked third and fourth respectively with 7 and 5 as scores. Daily mean GM of trade in *Moringa* leaves was significantly higher ( $p < 0.05$ ) than that from *Amaranthus*, Sorrel and *Ceratotheca* leaves. Trade in *Moringa* leaves therefore generated higher financial benefits than the other leafy vegetables. The challenges of its trade were poor sheds/storage facilities, inadequate processing equipment and sources of credit, as well as rotteness and seasonality in yield. The study recommended the provision of rural infrastructures as well as processing and storage facilities to improve trade benefits to the traders from these commodities.

**Key words:** Challenges of trade, financial benefits, Jalingo LGA, leafy vegetables, *Moringa*

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### **I. Introduction**

*Moringa oleifera* (Lam) is the most widely known species out of the 12 from the Moringaceae [1]. It is variously known as ‘Haakoobisii’ by Mumuye people, ‘Zogale’ in Hausa, ‘Jeghlegede’ in Tiv, ‘Gegeredi’ in Idoma, and ‘Gelgedi’ in Igala. The plant has been documented among the most nutritive plants on earth with numerous uses [2]. The most impressive of its numerous uses is that of fighting malnutrition, famine and poverty among the underdeveloped and less privileged communities [3, 4, 5, 6]. It has been used in salads, machine lubrication, and in the manufacture of perfume and hair care products. Studies have shown that the plant is very rich in nutrients. For instance, Gram for Gram dried *Moringa* leaves are known to contain 17 times the Calcium of milk, 10 times vitamin A of Carrot, 0.5 times the vitamin C of Oranges, 15 times the Potassium of Bananas, 25 times the Iron of Spinach, nine times protein of Yogurt, [6, 7, 8]. The plant provides income to many families and this is used in solving other family needs like procuring foodstuffs and clothes, paying of hospital bills, and settling school fees.

In Niamey, harvesting, transporting and selling of *Moringa oleifera* leaves is the responsibility of women; and three women in the village of Sarando-Bene have made this their principal employment [9]. In fact, this empowers them economically to support their husbands in fending for the needs of the immediate and extended family members. Thus, women have productive capabilities in national development efforts [10]. They therefore need encouragement in the fight against poverty. According to [10] more than 1.2 billion people or 24 % of the world’s population live in abject poverty. On the other hand, [11] reported that not less than 80% of Nigerians are living in abject poverty. Poverty, according to the author, persists in Nigeria because the society is not committed to fighting it. Government and the people do not have the political will of changing the way our resources are managed and utilized. We need to teach and educate our youths and all stake-holders on hard work, commitment and perseverance. In Taraba State, women are the principal traders of leafy vegetables, and they have central role to play in the fight against poverty in the region. They should therefore be the central focus in the fight against poverty in the region.

Trade in *Moringa oleifera* leaves has very high potentials in ameliorating poverty among peasant communities [9, 12, 13, 14]. Thus, [13] observed that if the right processing and distribution of *Moringa* products are structured, its full commercial values could be reaped to address poverty challenges. The [15] reported that poverty level in Nigeria stood at 70% of the population as at 2007. In North Eastern Nigeria poverty is pandemic; about 72.2% of the population in the region are poor and female are the worst hit [16]. As part of the efforts at fighting poverty, many women are involved in trading activities, particularly in leafy vegetables. However, not much is documented about trade in *Moringa oleifera* leaves in the study area, and Northeastern Nigeria in general. Consequently, scanty documentation exists on potentials of *Moringa oleifera* leaves for income to women in the study area; needless mentioning documentations on comparative economic advantage and commercialization of the species. This study hopes to narrow down this gap by providing some data that may help to identify better

trading opportunities for Moringa leaves. The study therefore examines trade in Moringa leaves vis-à-vis some selected agricultural leafy vegetable in the area in terms of income potentials. It also identifies challenges of trade in Moringa leaves towards optimum benefits.

## **II. Methodology**

### **2.1 Description of the Study Area**

This study was carried out at Jalingo Local Government Area (L.G.A.), Taraba State. It has a population of 140,318 (71,997Male & 68,321Female) at 3.1 % annual growth [17]. The land mass area is 3,871 km<sup>2</sup>, and it lies between Longitude 11° 09' and 11° 30' East and Latitude 8° 07' and 9° 0' North [18]. It shares boundary with Yorro L.G.A. to the East, Lau L.G.A. to the North, and Ardo Kola L.G.A. to the South-West. The LGA has ten council wards namely; Turaki 'A' and 'B', Sintali 'A' and 'B', Sarkin dawaki, Kachala- Sembe, Baraya, Majidaddi, Kona and Yelwa. Mumuye, Fulani, Kona, Jenjo, Wurkum and Hausa are the major tribes, while Nyandang, Karinjo, Lo, Chamba, and Kununi are the minor tribes [18].

### **2.2 Study Population, Sampling Procedure and Sample Size**

The study population comprises all the female traders of Moringa leaves and other leafy vegetables in Jalingo LGA. Applying a 40% sampling intensity, four council wards out of 10 were randomly selected for the study. Eight markets (two in each ward) were then sampled and 15 female traders that were involved in the trade of the four leafy vegetables from these markets were purposely selected and interviewed. A sample of 120 female traders was therefore selected from these markets for the study.

### **2.3 Study Design, Data Collection and Analysis**

The study involved a survey design, using pre-tested semi- structured questionnaire, interview and self observation. Data were collected during the rainy season, between September and November, 2012, in Jalingo L.G.A. Information was elicited on prices of the leafy vegetables, marketing costs (transportation costs, market fees and producer price or purchasing cost), and challenges of trade in Moringa leaves in the study area. All sales were standardized in Naira/kg. The recorded prices were determined from the markets through haggling.

Visits to the markets were both on normal market days and outside the normal market days. Weights of the leaves determined using weighing balance were recorded together with the cost per each bundle sampled. At the end, the total quantity each trader sold on a daily basis and the prices sold were determined over the study period and recorded.

The collected data were collated and analyzed using descriptive statistics like standard deviation, mean, and percentages following [19, 20, 21]. GENSTAT statistical package was used. Financial benefits were determined through Gross margin (GM) analysis, and these were compared using Analysis of Variance (ANOVA) and prioritization matrix. The formula for GM analysis in line with [22] is as follows:

$$GM = GI - TVC \dots \dots \dots 1$$

Where;

GM= Gross Margin

GI= Gross income

TVC= Total Variables Costs, which in this study were cost price or producer price, transportation cost, and market fee.

## **III. Results and Discussion**

### **3.1 Financial Benefits of Trade in Moringa oleifera and other Leafy Vegetables in Jalingo Local Government Area Markets, Taraba, Nigeria**

TABLE 1 presents Gross Margin (GM) analysis of trade in Moringa leaves and other leafy vegetables in Jalingo LGA. The daily mean Gross Income (GI) values of trade in Moringa leaves were higher than those of the other leafy vegetables in all the markets studied. This was followed by those of trade in Amaranthus, Sorrel and Ceratotheca respectively. A similar trend, with little variations, was also observed in the daily mean GM values of the leafy vegetables. In the succeeding sections, detailed analyses of these financial benefits (GI and GM) are considered.

**Table 1: Gross Margin Analysis of Trade in Moringa Leaves and Other Leafy Vegetables in Jalingo Local Government Area, Nigeria**

Leafy Vegetables / Council wards	QSD (Kg) A	PMP/kg g B	CP C	*TP D	*Market fee E	TVC = (C+D+E) F	GI= (A × B) G	GM = (G- F) H
<b>Barade</b>								
Moringa	11.87	116.26	947.6 7	62.3 5	13.91	1023.93	1380.00	356.07
Amaranthus	9.73	49.92	314.6 7	62.3 5	13.91	390.93	485.72	94.79
Sorrel	9.38	35.36	197.3 3	62.3 5	13.91	273.59	331.68	58.09
Ceratotheca	42.67	7.18	193.0 0	62.3 5	13.91	269.26	306.37	37.11
<b>Kachala-Sembe</b>								
Moringa	11.37	97.98	824.0 0	42.4 1	14.27	880.68	1114.03	233.35
Amaranthus	6.33	90.97	427.0 0	42.4 1	14.27	483.68	575.84	92.16
Ceratotheca	5.17	86.20	308.0 0	42.4 1	14.27	364.68	445.65	80.97
Sorrel	8.60	37.89	213.6 7	42.4 1	14.27	270.35	325.85	55.50
<b>Kona</b>								
Moringa	8.38	152.15	888.0 0	45.2 3	15.22	948.45	1275.01	326.56
Sorrel	5.45	75.11	265.6 7	45.2 3	15.22	326.12	409.35	83.23
Amaranthus	5.87	91.91	402.0 0	45.2 3	15.22	462.45	539.51	77.06
Ceratotheca	5.52	73.16	286.3 3	45.2 3	15.22	346.78	403.84	57.06
<b>Sintali B</b>								
Moringa	9.45	78.55	505.6 7	64.0 9	14.78	584.54	742.30	157.76
Sorrel	7.00	57.76	263.8 3	64.0 9	14.78	342.70	404.32	61.62
Amaranthus	6.67	62.11	278.3 3	64.0 9	14.78	357.20	414.27	57.07
Ceratotheca	6.40	57.16	235.0 0	64.0 9	14.78	313.87	365.82	51.95

Note: QSD= quantity sold daily, PMP = prevailing market price, TP= transportation cost, CP = Cost price or producer price,

TVC = Total variable cost, GI = Gross income; GM = Gross margin

\*Transportation costs and market fee are constant for all commodities in every market because charges were per consignment, and so, mean costs were assumed to be unit cost of a commodity [23].

### 3.2 Mean Daily Gross Income of Trade in Moringa Leaves vis-à-vis other Leafy Vegetables in Jalingo LGA Markets, Taraba State, Nigeria

TABLE 2 presents the Prioritization matrix for the mean daily GI of trade in Moringa leaves and other leafy vegetables in Jalingo LGA markets. The Prioritization Matrix values are shown as superscripts in this table. The mean daily GI from trade in Moringa leaves consistently ranked higher than that from all the other leafy vegetables traded in Jalingo markets. In Barade (TABLE 2, column two) for instance, the daily GI of trade in Moringa leaves (NGN1380.00) ranked first with a score of four (see superscripted values). That of trade in Amaranthus leaves (NGN485.72) ranked second with a score of three, while those of trade in Sorrel leaves (NGN331.68) and Ceratotheca leaves (NGN306.37) ranked third and fourth respectively with two and one as scores. The daily GI values of trade in these vegetables in Kona and Sintali B markets also followed a similar trend. However, in Kachala-Sembe market, there was a variation; the mean daily GI of NGN445.65 from trade in Ceratotheca with a score of two was ranked third; while that of trade in Sorrel (NGN325.85) was ranked fourth with a score of one. In summary, the mean daily GI of trade in Moringa leaves (NGN1127.84) ranked first with aggregate score of 16 indicated by the superscripted scores in TABLE 2, sixth column. That of trade in Amaranthus leaves (NGN503.84) ranked second with aggregate score of 12, while that of trade in Sorrel leaves (NGN367.80) and Ceratotheca (NGN380.42) ranked third and fourth respectively with the scores of 7 and 5. Although the mean daily GI of trade in Ceratotheca leaves (NGN380.42) was higher than that of trade in Sorrel leaves (NGN367.80), aggregate ranking scores (superscripted values of TABLE 2 column six) ranked the mean GI of the later leafy vegetable third and that of the former fourth. This is because during ranking, the daily GI values from Sorrel leaves scored two marks each in three markets (Barade, Kona, and Sintali B), and one mark in Kachala-Sembe. Conversely, Ceratotheca leaves scored two marks in only Kachala-Sembe market and one mark

each in Barade, Kona and Sintali B markets respectively. The two commodities therefore swap positions in the ranking of the mean daily GI values at Kachala-Sembe, where the mean daily GI of Sorrel (NGN325.85) scored one mark and that of Ceratotheca (NGN445.65) scored two marks. Thus, the mean daily GI of Sorrel leaves scored seven marks, while Ceratotheca leaves scored five. However, comparing the magnitude of the mean daily GI differentials of these two leafy vegetables in the four markets will indicate a negligible margin, except for Kachala-Sembe market where the difference was a bit large (NGN119.80 i.e. NGN445.65 - NGN325.85) to the extent of making the mean daily GI of Ceratotheca leaves higher than that of Sorrel. Besides, ranking was not based on the magnitude of the differential values of the mean daily GIs from the leafy vegetables; instead it was based on the magnitude of the actual mean daily GI values.

The higher mean daily GI values of trade in Moringa leaves over the other leafy vegetables indicate that Moringa leaves had higher financial benefits to the traders than the other leafy vegetables. The higher financial benefits of Moringa leaves over the other leafy vegetables may be credited to its relatively higher socio-economic and nutritional values to the people. For instance, [2] and [13] observed that Moringa plant is widely recognized in the tropics and subtropics as a panacea for improving the nutrition of local communities, and its leaves and pods are the most widely valued of all trees.

Table 2: Prioritization Matrix for the Daily Gross Income of Trade in Moringa Leaves and the Other Leafy Vegetables in Four Markets in Jalingo LGA, Taraba State, Nigeria

Leafy Vegetables	Daily Gross Income(*NGN) Values across the Jalingo LGA Markets				Mean GI
	Barade	Kachala-Sembe	Kona	Sintali B	
Moringa	1380.00 <sup>4</sup>	1114.03 <sup>4</sup>	1275.01 <sup>4</sup>	742.30 <sup>4</sup>	1127.84 <sup>16</sup>
Amaranthus	485.72 <sup>3</sup>	575.84 <sup>3</sup>	539.51 <sup>3</sup>	414.27 <sup>3</sup>	503.84 <sup>12</sup>
Sorrel	331.68 <sup>2</sup>	325.85 <sup>1</sup>	409.35 <sup>2</sup>	404.32 <sup>2</sup>	367.80 <sup>7</sup>
Ceratotheca	306.37 <sup>1</sup>	445.65 <sup>2</sup>	403.84 <sup>1</sup>	365.82 <sup>1</sup>	380.42 <sup>5</sup>

- Note:
- Superscripts represent ranking scores, which range from 1 to 4 with 1 as the lowest score and 4 the highest
  - The superscripted scores in column 6 are aggregate score of a vegetable among other vegetables across the markets.
  - Prioritization criteria: Gross income (GI) from vegetables in four Markets. Any vegetable with the least GI scores one, while that with the highest GI scores four. Any vegetable that is ranked first in all the markets scores 16, while those that ranked fourth in all the four markets score four.
  - Mean GI (last column) represents average GI computed from GI values of vegetable leaves in a row.
  - \*NGN = Nigerian Naira; NGN158.00 ≡ USD1
  - Amaranthus = (Amaranthus caudatus); Ceratotheca = (Ceratotheca sesamoides); Moringa = Moringa oleifera; Sorrel = Hibiscus sabdariffa

The result in TABLE 3 presents the mean daily GMs of trade in Moringa leaves and three other leafy vegetables in Jalingo LGA markets, Taraba State. The mean daily GMs of trade in these leafy vegetables differ significantly ( $P < 0.05$ ) among each other within the markets studied in Jalingo LGA. Thus, at Barade market for instance, the mean daily GM of trade in Moringa leaves ( $356.07 \pm 22.37$ ) was significantly higher ( $p < 0.05$ ) than that of Amaranthus leaves ( $94.79 \pm 13.78$ ), which in turn was significantly higher than  $58.09 \pm 10.19$  and  $37.11 \pm 5.79$  from Sorrel and Ceratotheca leaves respectively. Similarly, at Kachala-Sembe market, the mean daily GM of trade in Moringa leaves ( $233.35 \pm 17.09$ ) was significantly higher ( $p < 0.05$ ) than those of Amaranthus ( $92.16 \pm 12.50$ ) and Ceratotheca ( $80.97 \pm 13.33$ ) leaves respectively. These were in turn significantly higher ( $p < 0.05$ ) than that of trade in Sorrel leaves ( $55.50 \pm 6.42$ ). Similar results were obtained in Kona and Sintali markets respectively.

Thus, mean daily GMs of trade in Moringa leaves were significantly higher ( $p < 0.05$ ) than those of the other leafy vegetables studied in Jalingo LGA markets. Trade in Moringa leaves in Jalingo markets was therefore more profitable than trade in the other leafy vegetables. This was followed by trade in Amaranthus leaves, sorrel and Ceratotheca in that order. Trade in Moringa leaves at Jalingo LGA markets could therefore be more effective in supplementing household income than trade in all the other leafy vegetables. The relatively higher financial benefits of trade in Moringa leaves over the other leafy vegetables portends that it's probably more valuable to the people than the other leafy vegetables. Again, [8] asserts that apart from Moringa being an immune booster, the plant has nutritional/medicinal values effective in managing malnutrition, HIV/AIDs, diabetes, hypertension, and pregnancy/lactation among other diseases. These multiple benefits of the plant perhaps generate more demand for it and hence all things being equal, the financial benefits from it.

**Table 3: Mean Daily GMs of Trade in Moringa Leaves and the other Leafy Vegetable in Jalingo LGA Markets between September and November, 2012.**

Names of Leafy Vegetables	GMs of the Leafy Vegetables (NGN*) in the Council Wards			
	Barade	Kachala-Sembe	Kona	Sintali B
Amaranthus	94.79±13.78 <sup>b</sup>	92.16±12.50 <sup>b</sup>	77.06±9.15 <sup>bc</sup>	57.07±9.94 <sup>b</sup>
Ceratotheca	37.11±5.79 <sup>c</sup>	80.97±13.33 <sup>b</sup>	57.06±11.33 <sup>c</sup>	51.95±11.06 <sup>bc</sup>
Moringa	356.07±22.37 <sup>a</sup>	233.35±17.09 <sup>a</sup>	326.56±29.69 <sup>a</sup>	157.76±13.40 <sup>a</sup>
Sorrel	58.09±10.19 <sup>c</sup>	55.50±6.42 <sup>c</sup>	83.23±12.66 <sup>b</sup>	61.62±12.55 <sup>b</sup>

Note: Values in the same column followed by different superscripts differ significantly (P<0.05).

\*NGN = Nigerian Naira; NGN158.00 ≡ \$1

Amaranthus = (*Amaranthus caudatus*); Ceratotheca = (*Ceratotheca sesamoides*); Moringa = *Moringa oleifera*; Sorrel = *Hibiscus sabdariffa*

### 3.3 Production of *Moringa oleifera* Leaves in Jalingo LGA, Taraba State

TABLE 4 presents the distribution of traders of *Moringa* leaves based on ownership of *Moringa* plantation. About 29.1% (comprising 10.8% in Sintali B; 10.0% in Kona; 7.5% in Kachala-Sembe, and 0.8% in Barade) of the traders indicated that they own *Moringa oleifera* plantation. Conversely, 70.9% (comprising 14.2% in Sintali B; 15.0% in Kona; 17.5% in Kachala-Sembe, and 24.2% in Barade) of the traders owned no *Moringa* plantation. The greater proportion of respondents with no *Moringa oleifera* plantation portends inadequate supply of the product in the area. Thus, [13] observed that poor production and inadequate supply of *Moringa* products would inhibit the realization of the full potentials in the commercialization of the species. Some of the reasons respondents advanced for not cultivating *Moringa* were shortage of seeds, livestock attacks, particularly the goats that browse on the bark of the trees, and aging that make some of the respondents less active in their trading activities.

**Table 4: Distribution of Moringa Leaf Traders Based on Ownership of Moringa Plantation in the Area between September and November, 2012. n = 30; N=120**

Trader's Response	Markets from where traders were sampled				% of N
	Kona	Kachala-Sembe	Barade	Sintali B	
Owns a farm	12(10%)	9(7.5%)	1(0.8%)	13(10.8%)	35(29.1%)
Do not have farm	18(15%)	21(17.5%)	29(24.2%)	17(14.2%)	85(70.9%)
Total	30(25%)	30(25%)	30(25%)	30(25%)	120(100%)

Note: n = 30 = number of traders sampled per market

Values in brackets are respondents' frequency as a proportion of N

N= 120 = Total number of traders sampled in the study area.

### 3.4 The Challenges of Trade in *Moringa oleifera* Leaves in Jalingo LGA Markets, Taraba State.

The result in TABLE 5 presents the challenges of trade in *Moringa* leaves at Jalingo LGA markets. All the traders (100%) indicated that poor sheds/storage facilities, inadequate processing equipment, inadequate source of credit, and seasonality in leaf yield were the main challenges of trade in *Moringa* leaves. Only 42.5% of the traders identified leaf rotteness as a challenge of trade in *Moringa* leaves in the area.

The main storage challenge expressed by the respondents was how to preserve the freshly harvested leaves of *Moringa* without damage or spoilage. They maintained that the fresh leaves of *Moringa*, if not dehydrated or dried within 24 hours, could acquire mould and ultimately lose its value. Most of the respondents could also not afford the modern storage devices like fridges and cold stores. Corroborating this view, [13] asserts that the main challenge of trade in *Moringa* leaves is the safe preservation of the fresh leaves from spoilage. In a study on determinants of profitability in yam production in Northern Taraba State [23] also reported similar challenges.

Furthermore, 100% of the traders in Jalingo markets complained of the seasonal supply of leafy vegetable form *Moringa*, which corresponds with its production cycle. Corroborating this claim, [13] reported that *Moringa* leaf yield is usually very high during the rainy season, and very low in the dry season. For instance, *Moringa* plantation plot (750 m<sup>2</sup>) in Niamey produced 440kg/month during the rainy season; the same plot produced only 80kg/month during the dry season. If the absence of rainfall could be the cause of the poor yield during the dry season, irrigation farming may be an alternative means of ensuring an all-year-round supply of the commodity.



**Table 5: Problems of Trade in Moringa Leaves in Jalingo LGA Markets between September and November, 2012. n = 30; N=120**

Problems Encountered	Markets from where traders were sampled				% of N
	Kona	Kachala-Sembe	Barade	Sintali B	
Poor sheds/storage facilities	30(100%)	30(100%)	30(100%)	30(100%)	120(100 %)
Poor processing equipment.	30(100%)	30(100%)	30(100%)	30(100%)	120(100 %)
Inadequate sources of credit.	30(100%)	30(100%)	30(100%)	30(100%)	120(100%)
Rottenness.	22(73.3%)	7(23.3%)	1(3.3%)	21(70%)	51(42.50%)
Seasonality in yield	30 (100%)	30(100%)	30(100%)	30(100%)	120 (100%)

Note: n = 30 = number of traders sampled per market

N= 120 = Total number of traders sampled in the study area.

#### IV. Conclusion

This study find out that trade in leafy vegetables at Jalingo LGA markets is financially rewarding; but Moringa leaves (a wild vegetable) had superior commercial values vis-à-vis the agricultural vegetables. Trade in Moringa vegetable is therefore more reliable in supplementing income to these female traders of leafy vegetables. The study also find out the challenges of trade in Moringa leaves to include poor sheds/storage facilities, inadequate processing equipment, poor sources of credit and seasonality in leaf yield and rottenness. This information will facilitate development agents and policy makers to make decisions that will provide useful solutions to address those problems. Costs and returns data from this study will also guide funding institutions and potential investors on the financial commitment required for effective take off in this kind of business. The study thus recommended the provision of rural infrastructures as well as processing and storage facilities to ensure increased trade benefits to the people from these commodities. Also, traders are encouraged to establish personal plantations of Moringa, while Governments and other development agents raise Moringa oleifera seedlings and distribute to the farmers for large scale production and continuous supply for trade and consumption in the area.

#### References

- [1] Wikepedia. (2000). Moringa; Available at: <http://en.wikipedia.org/wiki/Moringa>. Wikepedia the free encyclopedia.2000
- [2] Rodovich, T. (2009). Farm and forestry production and marketing profile for Moringa (*Moringa oleifera*) in: Elevitch, C.R. (ed.). Specialty crops for Pacific Island Agroforestry Permanent Agriculture Resources (PAR), (Holualoa, Hawai'i, 2009). Available at: <http://agroforestry.net/scps>
- [3] Quattrocchi, U. CRC World Dictionary of Plant Names: Common Names, Scientific Names, Eponyms, Synonyms, and Etymology. (3: M-Q. CRC Press, 2000).
- [4] Fahey, J.W. (2005). *Moringa oleifera*: A review of the medical evidence for its nutritional, therapeutic and prophylactic properties part1, Trees for Life Journal. 1997. Available online at: [http:// Moringgamaunggay.com/john-Hopkins.pdf](http://Moringgamaunggay.com/john-Hopkins.pdf). Retrieved on 24<sup>th</sup> March, 2013
- [5] Johnson, B.C. Clinical Perspectives on the Health Effects of *Moringa oleifera*: A Promising Adjunct for Balanced Nutrition and Better Health. (KOS Health Publications August 2005).
- [6] Armelle, S.S. and Melanie, B. Fighting Malnutrition with Moringa Leaves: an/resource. 2006. Available at [http://www.Moringanews.org/doc/GB/papers/Armelle text. GB.pdf](http://www.Moringanews.org/doc/GB/papers/Armelle%20text.%20GB.pdf). Retrieved on 26<sup>th</sup> May 2012
- [7] Anonymous, (2010). Tree of life available at [http://www.buy Moringa now.com](http://www.buyMoringaNow.com). Retrieved on 26<sup>th</sup> May 2012
- [8] Institute of Chartered Chemists of Nigeria, ICCN. Magical and Economic Powers of Moringa plant. 2013. Available at: [www.enjoymoringa.com](http://www.enjoymoringa.com). Retrieved on 17<sup>th</sup> March, 2014.
- [9] Saint,Sauveur (de). A. *Moringa oleifera au Niger et en Inde, ou quand les agriculteurs preferentplater des arbres, Le Flamboyant*, 43., 1997. 16-23.
- [10] Olaleye, F. Nigerian Agriculture. Nigeria's Pioneer Agricultural News- reporting and Trade promotion Magazine, 3 (4). 1999, 34.
- [11] Daura, S.Z. Nigerians wallow in poverty. Nigerian Agriculture News update bulletins, October, p17
- [12] Foiddl, N; Makkar, H.P.S. and Becker, K. The potential of *Moringa oleifera* for Agricultural and Industrial uses; Development Potential for Moringa Products October 29<sup>th</sup> –Nov. 2<sup>nd</sup> 2001. Dar es salaam, Tanzania.
- [13] Gamatie, M. *Moringa oleifera* Management Systems in the River Niger Valley: The case of Sarando Area. Development Potential for Moringa Products .October 29<sup>th</sup> –Nov. 2<sup>nd</sup> 2001. Dar es salaam, Tanzania.
- [14] Armelle, S.S. and Gaele, H. *Moringa Culture and Economy in Niger et en Inde, ou quand les agriculteurs préfèrentplanter des arbres, Le Flamboyant*, 43. SILVA, Paris, France. 1999, 16-23.
- [15] World Bank. New Data Show Historic Declines in Global Poverty. 2012. Available at [http// business-ethics.com/2012/03/27/9309-world-bank-new-data-sh](http://business-ethics.com/2012/03/27/9309-world-bank-new-data-sh). Retrieved 23<sup>rd</sup> Nov, 2013.
- [16] Nigerian Bureau for Statistics, NBS. Federal Capital Territory, Abuja. 2005
- [17] National Population Census, NPC. Federal Republic of Nigeria official gazette, Abuja Vol. 96 No.2. 2009
- [18] Jalingo Local Government Area. Brief Historical Background of Jalingo Local Government Area of Taraba state, 2012.
- [19] Ilesanmi, F. A; and Linus, G. M. Towards a Sustainable environmental Management. Journal of sustainable Development in Agriculture and Environment Vol.1 (1).2005, 58-67
- [20] Akosim, C; Bode, A.S; Kwaga, B.T; and Dishan, E.E. Perceptions and Involvement of neighbouring Communities of Kainji Lake National Park towards the Parks Conservation Programmes: Journal of Research in Forestry, Wildlife and Environment 2 (1) 2010, 44-53
- [21] Aminu, M.K; Bukar, M. B; and Adamu, A.U. Role of Agricultural education in Re-Branding Women Farmers in Nigeria. Sahel Journal of Teacher Education, 2 (2).2010, 14-23
- [22] Abubakar, I; Iheanacho, A.O; and Abdullahi, A.B. Determinants of Profitability in yam production in Northern part of taraba state, Nigeria. Journal of Sustainable Development on Agriculture and Environment 1(1). 2005, 27-38.
- [23] Maraseni, T.N. Shivakoti, G.P., Cockfield, G., and Apan, A. Nepalese Non-timber forest products; an analysis of the equitability or profit distribution across a supply chain to India. Small-Scale Forest Economics, Management and Policy. 5 (2). 2006, 191-206