

## Contribution of Indigenous Vegetables and Fruits to Poverty Alleviation in Oyo State, Nigeria

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**ABSTRACT** This study examines the contribution of indigenous vegetables and fruits to poverty alleviation in south Oyo State, Nigeria. The personal characteristics of the farmers were identified, use of indigenous vegetables and fruits ascertained and contribution to poverty reduction determined. Five villages were purposively selected due to concentration of indigenous vegetables and fruits and from each of the 5 villages, 20 households were randomly selected to give a total sample size of 100 households. Data were collected from primary source through the use of interview schedule based on structured questionnaire and analyzed with SPSS version 17 using frequency counts, and percentages. The results show that majority of the farmers were male (76%), above 40 years of age (58%) married (60%) with no formal education (53%) and having family size of 5 to 10 persons (44%). The most available crops are mushroom (92%), *ocimum gratissium* (88%) and Bush mango (80%). Mushroom (80%) is the most used plant for food, *Momordica charantia* for medicinal use (50%) and *Calotropis procera* (84%) was widely used for animal feed. Also, the most notable crops that generate income to farmers are *Vitex doniana* (92%); *Calotropis procera* (89%) and *Phaseolus lunatus* (80%). Many (40%) of the farmers were in the income category of ₦ 5000 – ₦ 10 000. It is noteworthy, however, that for all income categories, the least proportion of contribution by indigenous vegetables and fruits was 25 percent.

### INTRODUCTION

There is a wide variety of indigenous vegetables and fruits found in Africa, which are chief sources of nutrients, vitamins, antioxidants, minerals, and proteins (Odhav et al. 2007). Some of the indigenous vegetables and fruits are mainly used by inhabitants for medicinal purposes (Eifediyi et al. 2008). Indigenous vegetables and fruits are sold locally, thus improving economic status of such communities. These wild vegetables vary according to location, depending on climatic conditions. Luchen and Mingochi (1995) stated that most wild or traditional plants are specific to areas and ethnic groups. This indicates that from a variety of wild leafy plants, a certain ethnic group may acknowledge and use only a few and regard others as weeds, while another ethnic group may acknowledge such species as food.

Classifying plants according to place of origin, there are indigenous and exotic plants and within Africa's context, indigenous plants are genuinely native to Africa, while indigenized species originated in other continents like Asia, South and Central America, but have been integrated with traditional African food culture and agriculture (Laker 2006). There is a wide va-

riety of indigenous vegetables and fruits that several African ethnic groups use for various reasons, but mainly for nutritional and medicinal purposes. Eifediyi et al. (2008) pointed out that the use of indigenous vegetables and fruits is part of African cultural heritage, and they play important role in the tradition and food culture of the African household.

Vegetables plays very important role as a source of nutrients to the human body and their consumption ensures intake of various essential vitamins and mineral elements thus avoiding the problem of malnutrition (Yamaguchi 1983). FAO (1996a) pointed out that the problem of malnutrition is most escalated among children and pregnant women, and is responsible for high mortality rates of these groups. Insufficient consumption of vegetables and fruits annually causes 2.7 million deaths worldwide, and is one of the top ten risk factors contributing to human mortality (Prescott-Allen R and Prescott-Allen C 1990). This necessitates the inclusion of indigenous vegetables and fruits (especially where exotic vegetables are not affordable) in diets in order to alleviate problems of hunger and malnutrition which is most prevalent in several African countries. Rahim et al. (2007) indicated that indigenous vegetables (IVs) like *Moringa*,

sword bean (*Lablab* spp.), country bean (*Dolichos* spp.), *Luffa*, aroids (*Colocasia*, *Amorphophallus*, *Alocasia*, *Xanthosoma*), cucurbits, yam (*Dioscorea*), leafy vegetables supplemented the foods and employment opportunity to overcome poverty in Bangladesh.

There is an increasing interest in indigenous vegetables and fruits throughout the world, reflecting a growing trend within agriculture to identify and develop new crops for export and domestic markets which are often referred to as neglected and underutilized species. The FAO Global Plan of Action for the Conservation and Sustainable Use of Plant Genetic Resources for Food and Agriculture, which was adopted in 1996 by approximately 150 countries, identified the improved conservation and use of neglected and underutilized species as one of its 20 main activities (FAO 1996b). Interest in indigenous vegetables and fruits crops arises from a variety of socio-economic concerns and needs. These concerns originate from a variety of concerns and/or expectations ranging from ethical, social and economic. Many indigenous vegetables and fruits species are recorded to occur wild or under cultivation. In many instances, these species are the only crops that can cope with such harsh environments unfit for other crops, where they can provide sustainable productions. They contribute thus significantly to maintain diversity and hence more stable agro-ecosystems. Their novelty is thus not related to their introduction to new areas but rather to the ways in which old and new uses are being re-addressed to meet today's needs.

The strengthening of market systems for underutilized and neglected crops is ensuring the broader use of these species and better commercialization has translated into greater opportunities for meeting demands from local users and elsewhere. The production – to – consumption system of *Garcinia kola* seeds (Bitter kola) has an obvious positive impact on the communities. In particular, its commercialization has contributed to improving the standard of living of the villagers. Its economic importance cannot be underestimated, especially in the area of poverty alleviation among rural people. The trade of this product established that a substantial amount of revenue can be realized from farm gate to village and urban markets (Kabuye 1998).

In some communities, wild vegetables are

used as a source of income, especially the rural poor communities. They usually harvest these vegetables and sell them locally. For those families which cannot afford expensive exotic vegetables, wild vegetables remain the only alternative. Odhav et al. (2007) pointed out that indigenous vegetables and fruits represent inexpensive but high quality nutrition sources for the poor segment of the population. Since many indigenous food plants grow wild, they are accessible, they can be collected freely and are thus available to everyone, including the poor (Kabuye et al. 1999). If cultivated indoors, there is high possibility of high returns since most of these plants have short life span and can be cultivated 3-4 times a year.

Notwithstanding the usefulness of these plants, they remain under threat of being lost due to poor harvesting methods such as uprooting or harvesting which involves destroying the entire plant and harvesting the reproductive parts before or at seed formation (Luchen and Mingochi 1995). Adebayo and Opabode (2004) reported that the diversity of indigenous leaf vegetables and fruits of Africa is being seriously eroded as a result of multiplicity of environmental, political and socio-economic factors. Farming practices and other critical factors such as land clearing for agriculture; urbanization, industrialization and population increase, result in demand for land leading to the destruction of plants species. In most instances, knowledge of indigenous vegetables and fruits is with older people, thus they stand a chance of being lost due to aging. Despite the perceived usefulness and untapped potential of indigenous vegetables and fruits, they have been neglected by farmers and rural dwellers and this may lead to their extinction, these crops feature promptly in the food security, socio-economic conditions and livelihood activities of rural people. They serve as foods to household and some income generating activities are based on these crops. Their medicinal and cultural values are also explored. It is important to explore these uses and their contribution to poverty alleviation as the results may focus the attention of science and research to these crops and their potentials explored. This study examines the contribution of indigenous vegetables and fruits to poverty alleviation in south Oyo State, Nigeria. The personal characteristics of the farmers were identified, use of indigenous

vegetables and fruits ascertained and contribution to poverty reduction determined.

### METHODOLOGY

The study was carried out in Akinyele Local Government Area of Oyo State between March and December 2008. It is bounded by Ibadan North Local Government in the south. It is also bounded by Lagelu Local Government in the east; Afijio Local Government in the north. The occupation of the inhabitants is agriculture, trading, food processing but primarily agriculture. The headquarters is at Moniya which is about 10 km from Ibadan; it is divided into 12 political wards. The rainfall pattern is bimodal with peaks in May and August. There is a distinct period of dryness between November and February. The rainfall pattern allows for practices in the humid zone, the slash and burn techniques followed by fallow period. Majority grow arable crops and staple crops. The population of the study includes all farmers in Akinyele Local Government Area. From the list of villages in Akinyele Local government area of Oyo State, 5 villages were purposively selected due to concentration of indigenous vegetables and fruits. From each of 5 villages, 20 households were randomly selected to give a total sample size of 100 households. Data were collected from primary sources through the use of interview schedule based on structured questionnaire on the variables of the study with questions on personal characteristics, use of indigenous vegetables and fruits and contribution to poverty reduction determined. Data collected were analyzed with SPSS version 17 using frequency counts, and percentages.

### RESULT AND DISCUSSION

Table 1 presents the personal characteristics of farmers. It was a wide belief that males are more dominant in agricultural activities compared to the female, although females are not left out, because they serve as helping hands especially in harvesting and processing of produce. This was due to the fact that females were considered to be weaker compared to the male counterpart. In the study area, 76 percent of farmers were males and only about 24 percent are females. This shows that males were

more involved in the cultivation of indigenous vegetables and fruits crops than the females. Oladele and Adesope (2004) reported male dominance in agricultural activities in south-western Nigeria. Age distribution is very important not only for this study but for all agricultural productions. Although experience in farming is very important and it comes with years of practice, yet fairly young farmers are needed on farm because agricultural production is strength demanding. More production activities could be engaged by young farmers, hence, enhanced productivity. But, in the study area, it was found that majority of producer of indigenous vegetables and fruits are older people. They may have being probably attracted to the city for city life or engage in some other activities outside farming. Adeoti and Oladele (2004) reported that the mean age among farmers in Oyo State Nigeria was 51.1 years. Table 1 reveals that all the respondents interviewed were married. This is because married men are regarded to have more labour force compared to unmarried because the farmers depend on the family as an immediate source of the labour. Therefore, the larger the family size, the more the available labour force and consequently the more the productivity. In the interviews conducted, 60 percent were married and 17 percent were single. This percentage may prove that the respondents depend on family labour for their need for labour force. Oladele (2008) reported similar demographic findings among farmers in Oyo State, Nigeria.

It was found that higher population of farmers interviewed were Christians (61%). This was to help to identify the week days that will be most effective to visit the farmers. From the percentage distribution it could also be inferred that farming activities will be rare on Sundays and Fridays of the week as most of the farmers are Christians and Muslims. In any society, educational levels of the citizen is very important, much more in agricultural productions, because of the new ideas and modern techniques that are streaming up especially in conserving and increasing the use of indigenous vegetables and fruits. This has to do with the educational level of the farmers. From the study it was found that majority of the farmers in the study area were illiterate because about 53 percent of the farmers interviewed had no formal education, 14 percent had primary edu-

**Table 1: Personal characteristics of respondents**

Variable	Frequency	Percentage
<i>Sex</i>		
Male	76	76.0
Female	24	24.0
<i>Age Distribution</i>		
Under 20	1	1.0
21 – 25 years	4	4.0
26 – 30 years	16	16.0
31 – 40 years	21	21.0
Above 40 years	58	58.0
<i>Marital Status</i>		
Single	17	17.0
Married	60	60.0
Divorced	2	2.0
Widowed	21	21.0
<i>Main Occupation</i>		
Farming	64	64.0
Trading	27	27.0
Students	4	4.0
Unemployment	5	5.0
<i>Religion</i>		
Christianity	61	61.0
Islam	37	37.0
Traditional	2	2.0
<i>Level of Education</i>		
No formal education	53	53.0
Primary education	24	24.0
Secondary education	11	11.0
Adult literacy	12	12.0
<i>Family Size</i>		
Below 5	34	34.0
Between 5 – 10	44	44.0
Between 11 – 15	22	22.0

cation, 11 percent secondary education and 12 percent had adult literacy. This high level of illiteracy could affect the level of their exposure to challenges and strategies in promoting conservation and use of indigenous crop species.

The family members of a farming family are the immediate supply of the farm labour force, therefore, the larger the family size the greater the productivity and the more the social status of the farmers. According to the study, it was discovered that the family size of the study area was relatively large because from the farmers interviewed about 44 percent have family sizes of 5 – 10, while 34 percent have below 5 family sizes. Similar findings on demographic characteristics were reported by Oladele (2010) among farmers in Oyo state Nigeria.

Table 2 shows the available crops and uses of indigenous vegetables and fruits in the study area. The most available crops are mushrooms (92%), *ocimum gratissium* (88%) and bush mango (80%). The reason why these are the most

prominent may be due to the fact that they contribute to food intake either as soup ingredient or fruits. The market demand for these crops could be another plausible reason. However, *Aframomum melegueta* (34%), *vitex doniana* (43%) and *Phaseolus lunatus* (26%) were not prominent because they attract low level of income. Mushroom (80%) is the most used plant for food out of the listed indigenous vegetables and fruits. In terms of medicinal use, *Momordica charantia* has the highest proportion (50%) while *Calotropis procera* was the most widely used plants for animal feed in the study area. These uses have cost implication for the framers by supporting other areas of their livelihood activities and saving cost in some income generating activities. Adebooye (2004) reported that *Solanecio biafrae* (Olive and Heirne) C. Jeffery, an indigenous leaf vegetable in south-west Nigeria is several times more expensive than the routinely cultivated species especially during the dry season. Also, in Nigeria, Odiaka and Schippers (2004) reported that a fruit of *T. occidentalis* cost as much as US\$0.70-1.00 each in the year 2002.

Table 3 shows the income received per season by farmers in the study area. The most notable crops that generate income to farmers are *Vitex doniana* (92%); *Calotropis procera* (89%) and *Phaseolus lunatus* (80). Similarly, Bush mango (69%), mushroom (76%) and *cururbita pepo* (61%) contribute to income although not as much as the list above. This may be due to the fact that most of mango (69%), mushroom (76%) and *cururbita pepo* are eaten by farmers for their nourishment. This shows the extent to which indigenous vegetables and fruits can generate income to farmers. Adeboye and Opabode (2004) noted that indigenous leaf vegetables such as *Telfairia occidentalis* f. Hook, *Celosia argentea* L., *Amaranthus cruentus* L and *Solanum macrocarpon* L. are also sold at high prices during the dry season in south-west Nigeria. In Kenya, Abukutsa-Onyago (2003) showed that indigenous leaf vegetables offer a significant opportunity for the poor people in western Kenya to earn a living because indigenous leaf vegetables production can be done with little capital investment. A direct effect of this is that these vegetables provide employment opportunities for those that are outside the formal sector.

In Table 4, the income categories of respondent in the study were presented and the

**Table 2: Available and uses of indigenous vegetables and fruits**

Indigenous vegetables and fruits	Availability		Uses		
	Yes	No	Food	Medicine	Animal feed
<i>Aframomum melegueta</i>	59(59.0)	34(34.0)	3(3.0)	41(41.0)	15(15.0)
<i>Latua teraxacifolia</i>	61(61.0)	17(17.0)	38(38.0)	15(15.0)	15(15.0)
Bush mango	80(80.0)	7 (7.0)	71(71.0)	5 (5.0)	24(24.0)
<i>Vitex doniana</i>	20(20.0)	43(43.0)	11(11.0)	12(12.0)	77(77.0)
<i>Spondias mombin</i>	74(74.0)	9 (9.0)	59(59.0)	12(12.0)	29(29.0)
Bitter kola	66(66.0)	21(21.0)	34(34.0)	40(40.0)	26(26.0)
Mushroom	92(92.0)	5 (5.0)	80(80.0)	2 (2.0)	18(18.0)
<i>Megaphrynum macrostachym</i>	65(65.0)	22(22.0)	49(49.0)	4 (4.0)	37(37.0)
<i>Calotropis procera</i>	52(52.0)	21(21.0)	1 (1.0)	15(15.0)	84(84.0)
Sour orange	68(68.0)	10(10.0)	36(36.0)	35(35.0)	29(29.0)
<i>Solanum americanum</i>	75(75.0)	12(12.0)	65(65.0)	9(9.0)	1 (1.0)
<i>Momordica charantia</i>	62(72.0)	21(21.0)	2 (2.0)	50(50.0)	11(11.0)
<i>Cucurbita pepo</i>	56(56.0)	22(22.0)	49(49.0)	8 (8.0)	1 (1.0)
<i>Phaseolus lunatus</i>	41(41.0)	26(26.0)	35(35.0)	3 (3.0)	3 (3.0)
<i>Ocimum gratissimum</i>	88(88.0)	4 (4.0)	36(36.0)	40(40.0)	12(12.0)

**Table 3: Income per season from indigenous vegetables and fruits**

Indigenous vegetables and fruits	Income received per season	
	<₦5,000	>₦5,000
<i>Aframomum melegueta</i>	41(41.0)	59(59.0)
<i>Latua teraxacifolia</i>	43(43.0)	57(57.0)
Bush mango	69(69.0)	31(31.0)
<i>Vitex doniana</i>	8(8.0)	92(92.0)
<i>Spondias mombin</i>	30(30.0)	70(70.0)
Bitter kola	52(52.0)	48(48.0)
Mushroom	76(76.0)	24(24.0)
<i>Megaphrynum macrostachyum</i>	40(40.0)	60(60.0)
<i>Calotropis procera</i>	11(11.0)	89(89.0)
Sour orange	58(58.0)	42(42.0)
<i>Solanum americanum</i>	44(44.0)	56(56.0)
<i>Momordica charantia</i>	36(36.0)	64(64.0)
<i>Cucurbita pepo</i>	61(61.0)	39(39.0)
<i>Phaseolus lunatus</i>	20(20.0)	80(80.0)
<i>Ocimum gratissimum</i>	61(61.0)	39(39.0)

proportion of the income that is due to indigenous vegetables and fruits. In this way the, the contribution of indigenous vegetables and fruits to income and the extent to which they alleviate poverty can be inferred. Many (40%) of the farm-

ers were in the income category of ₦ 5000 – ₦ 10 000. It is noteworthy however that for all income categories, the least proportion of contribution by indigenous vegetables and fruits was 25 percent. This implies that indigenous vegetables and fruits is a major source of income among the respondents. Similarly, for all categories of income a greater proportion of the farmers had more than 50% contribution from Indigenous vegetables and fruits to their income. Shei (2008) noted that although native west African vegetables are not well known and documented, the few that have been identified and analyzed within the scope of the current research prove to have profound nutritional, economic and medicinal potential which if well exploited would possibly open up new markets for the global commercialization of native West African vegetables likewise, encourage the local and global cultivation, consumption and conservation of many other native West African vegetables, especially those which are presently facing the threat of extinction.

**Table 4: Income category and proportion of income due to indigenous vegetables and fruits**

Income category	Frequency (percentage)	Proportion due to indigenous vegetables and fruits		
		25%	50%	Above 50%
Less than ₦5,000	25(25.0)	15	10	10
₦ 5000 – ₦ 10 000	40(40.0)	7	13	20
₦ 11000 – ₦ 15000	20(20.0)	10	5	5
Above ₦ 15000	15(15.0)	2	3	10

₦ 150 = 1USD

## CONCLUSION

These findings have highlighted the contribution of indigenous vegetables and fruits to income and poverty alleviation in the study area. The proportion of indigenous vegetables and fruits to farmers' income is significant and thus the inference that they help alleviate poverty. Their commercialization in the domestic markets would result in raising the standard of living of those involved in it trading activities, in both the rural and urban centres. It is clear that through the volume of production each season *Vitex doniana*; *Calotropis procera* and *Phaseolus lunatu*, Bush mango, mushroom and *cururbita pepo* contribute to income through trade and thus help alleviate poverty by increasing the disposable income available to farmers.

## RECOMMENDATIONS

From the findings of this paper it is recommended that research and extension services should focus on these indigenous vegetables and fruits in order to harness their potentials for the enhancement of the livelihoods of farmers that are dependent on it. Farmers should also organize themselves as niche group for the marketing of indigenous vegetables and fruits such that they may have better returns.

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