



Research Article

# Use of some Neglected and Underutilized Plant Species among Rural Dwellers in Akinyele Local Government Area of Oyo State

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ARTICLE INFO	ABSTRACT
<p>Article No.: 060913821 DOI: 10.15580/GJAS.2013.12.060913821</p>	<p>The study investigated the use of neglected and underutilized plant species in Akinyele Local Government Area of Oyo State, Nigeria, with the specific objectives of assessing the demographic characteristics of rural dwellers, benefits of neglected and underutilized plant species, examining rural dwellers' knowledge and uses of neglected and underutilized plants, assessing rural dwellers' sources of information on utilization neglected and underutilized plant species. A multi-stage sampling technique was used to collect information with the aid of structured questionnaire from 120 respondents. Data collected were analyzed using frequency counts, percentages and multiple regression analysis. Respondents were mostly male, married, with little or no formal education. Most preferred sources of information are radio and extension agents. Respondents have a high (70.0%) knowledge of use of these plants. The chi-square analysis indicated that there was a significant (<math>X^2 = 17.272</math>, <math>p = 0.002</math>) relationship between rural dwellers' level of education and use of neglected and underutilized plant species at 0.05 level of significance. However, age (<math>\chi^2 = 5.208</math>, <math>P = 0.391</math>), sex (<math>\chi^2 = 1.734</math>, <math>P = 0.42</math>) and Marital status (<math>\chi^2 = 1.522</math>, <math>P = 0.467</math>) were not significantly related to the use of neglected and underutilized plant species by rural dwellers. The multiple regression analysis showed that there is a strong correlation between the benefits, knowledge, exposure to information and use of neglected and underutilized plant species. It was recommended that Sensitization programmes on utilization of neglected and underutilized plant species should use preferred sources like radio and extension agents in local languages.</p>
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## INTRODUCTION

According to IPGRI (2002), neglected and underutilized plant species are often considered 'minor crops' because they are less important than staple crops and agricultural commodities in terms of global production and market value. However, from the standpoint of the rural poor who depend on many of these species for their food security, nutrition and income, they are hardly minor. They may also be underutilized in terms of their potential to contribute to the income and well-being of the poor and to global food security in general. These species are also described as "neglected" or "orphan" plants since they have received scant attention from research and development, and there is little scientific information about them (Eyzaguirre et al. 1999). Their potential economic value remains "underexploited" (Padulosi and Houschle-Zeledon, 2004). Recent publications have underscored their importance in the livelihoods of the poor (Naylor et al. 2004), though core argument has been sustained in favour of their promotion today, is that such species are indeed being cultivated and used in small areas or harvested directly from the wild by indigenous communities as source of food, feed, shelter, medicine, contributing thus to improve in various ways, the quality of life in traditional agricultural and forest systems. They are therefore useful species and contribute consistently to the well-being of mankind.

However, these locally important species are frequently neglected by science. This neglect status places them in danger of continuing genetic erosion, further restricting development options for the rural poor. They also demonstrate an agronomic advantage in terms of adaptability to low input agriculture and marginal lands (Padulosi et al. 2002). They contribute thus significantly to maintain diversity rich and hence more stable agro-ecosystems. This is the case for bitter kola which is used as medicine, afforestation, wind-breaking etc.

Many neglected and underutilized species are nutritionally rich and adapted to low input agriculture. The erosion of these species can have immediate

consequences on the nutritional status and food security of the poor. Their enhanced use can bring about better nutrition and fight hidden hunger. For example, many underutilized fruits and vegetables contain more vitamin C and pro-vitamin A than widely available commercial species and varieties.

The use of plants has long been an intimate part of local cultures and traditions. Many neglected and underutilized species play a role in keeping alive cultural diversity associated with food habits, health practices, religious rituals and social exchanges. Focusing attention on neglected and underutilized species is an effective way to help a diverse and healthy diet and to combat micronutrient and deficiencies, the so-called 'hidden hunger' and other dietary deficiency particularly among the rural poor and the more vulnerable social groups in developing countries. In reality, local communities have used these plant species for generations but the current loss of local knowledge means that their traditional uses are being forgotten. Many underutilized species can make an important contribution to a better diet for local communities.

Despite the perceived usefulness and untapped potentials of neglected and underutilized species, it has been observed that these plants are going into extinction, thereby suggesting their non-existence in the nearest foreseeable future. Akinyele LGA of Oyo State is a rural LGA in Oyo State, with a large concentration of neglected and underutilized plant species. However, it has been observed that in the recent years, the population of these plants is now being threatened increasingly. This puts to doubt the knowledge and utilization of these plant species by the rural dwellers in this Local Government Area. The need to improve the health, food security and over all standard of living of the rural populace by bringing the various benefits of these crops necessitated this study. This is important since the results may focus the attention of science and research to these crops and their potentials being explored.

Therefore, this study was designed to examine the uses of neglected and underutilized crops by providing answers to the following research questions:

1. What are the demographic characteristics of the rural dwellers in Akinyele Local Government Area?
2. What are rural dwellers' present sources of information on utilization of neglected and underutilized plant species?
3. What are the benefits of neglected and underutilized plants in the study area?
4. What is the rural dwellers' knowledge of neglected and underutilized plants?
5. What are the uses to which neglected and underutilized plants are put in the study area?

## METHODOLOGY

### Study Area

This study was conducted in Akinyele Local Government of Oyo State, Nigeria which lies between latitude 7° 26' 23"N to 7° 40' 30"N and between longitude 3° 47' 4"E to 4° 05' 00"E. It occupies a land area of 464.892 square kilometers with a population density of 516 persons per square kilometre. Using

3.2% growth rate from 2006 census figures, the estimated population for the local government is 239,745.

The choice of Akinyele LGA was selected due to the presence of many rural communities. It is bounded by Lagelu Local Government Area in the east, Afijio Local Government in the north, Ido LGA in the west and Ibadan north LGA in the south. The occupations of the inhabitants are agriculture, trading, food processing but primarily agriculture. The

headquarter is at Moniya which is about 10km from Ibadan, it is divided into 12 political wards. The rainfall pattern is bimodal with peaks in May and August. There is distinct period of dryness between November and February. The rainfall pattern allows for the practices in the humid zone, the slash and burn techniques followed by fallow period. Majority of rural dwellers grows arable and staple crops such as maize, cassava, yam, cocoyam etc.

### Sampling procedure

The population involved in this study consisted of rural dwellers in Akinyele Local Government Area of Oyo State. The choice of Akinyele LGA for this research was due to its well known agricultural activities and concentration of neglected and underutilized plant species. A multi-stage sampling technique was used for this study. Akinyele LGA is subdivided into 12 wards, out of which 20% (two wards) were randomly selected. Each ward consists of an average of 12 villages and 2 villages (20%) were randomly selected per ward. Thirty (30) rural dwellers were also randomly selected from each of the 4 villages to give a sample size of 120 respondents. Structured interview schedule was used to elicit information from the respondents.

### Data collection and analysis

Data were collected from the primary sources with the aid of a structured interview schedule. The data

collected were analyzed with the aid of the descriptive statistical tools of frequency counts and percentage. An inferential tool, Chi-square ( $X^2$ ) was used to analyze the study hypotheses. The hypotheses were stated in null form ( $H_0$ ):

**H<sub>01</sub>:** There is no significant relationship between the rural dwellers personal characteristics and use of neglected and underutilized plant species.

**H<sub>02</sub>:** There is no significant relationship between the rural dwellers' sources of information and use of neglected and underutilized plant species.

## RESULTS AND DISCUSSION

### Demographic characteristics of the respondents

The Demographic characteristics of the respondents analyzed in this study include age, sex, marital status, and educational attainment. Analysis of results obtained from this study (Table 1) reveals that a majority (70.8%) of the respondents are between the ages of 46-65 years; youth comprised only 8.3%. This means that the older people were more knowledgeable or interested in the use of neglected and underutilized plant species more than the younger ones. The implication is that youths are not involved in the utilization of neglected and underutilized plant species to any appreciable extent. This may be due to inadequate indigenous knowledge of the nutritional and medicinal importance of the plants.

**Table I. Demographic characteristics of respondents (n = 120)**

Variables	Frequency	Percentage
<b>Age</b>		
Below 25	3	2.5
26-35	7	5.8
36-45	12	10
46-55	39	32.5
56-65	46	38.3
Above 65	13	10.8
<b>Marital status</b>		
Single	2	1.7
Married	115	95.8
Widowed	3	2.5
Divorced	-	-
<b>Educational attainment</b>		
No formal education	58	48.3
Primary education	29	24.2
Secondary education	16	13.3
Tertiary education	3	2.5
Adult education	14	11.7

Source: Field survey, 2011

The results depicted in Table 1 shows that majority of the respondents are married, while very few were single or widowed. This means that married people are more involved in the utilization of neglected and underutilized plant species and may receive assistance from their spouses in carrying out some activities on the farm. In terms of education, the majority (48.3%) of the respondents had no formal

education, while almost 52% had some formal education: adult, primary, secondary or post secondary education. It could be evident that a good proportion of rural dwellers are illiterate and this might act against acceptance of innovation.

### Sources of information on use of neglected and underutilized plant species

Sources of information are channels through which rural dwellers gain access to information on the use of neglected and underutilized plant species and other aspects of livelihood such as marketing. Information sources were evaluated by presenting respondents with a list of sources developed from literature and asking them to indicate which ones they use for accessing information on utilization of these plants,

frequency of access, and the most preferred source. Table 2 shows that the respondents have access to information on the use of neglected and underutilized plant species. The finding that about 94% of respondents used radio as an information source supports the findings of FAO (1989) who observed that radio was among the electronic media used successfully in rural areas.

**Table II. Percentage distribution of respondents based on their sources of information on use of neglected and underutilized plants (n=120)**

Information sources	Response (%)	Frequency of access (%)		Preference (%)
	Yes	Regular	Occasional	Most preferred
Extension agents	68.3	25.8	42.5	35.8
Radio	93.3	56.7	36.6	74.2
Farmers association	50.8	18.3	32.5	50.8
Friends/Relatives	35.8	18.3	17.5	9.2
Television/Video	44.2	8.3	35.9	28.3
Newspapers/Pamphlets	4.2	-	4.2	6.7
Mobile phone	29.2	21.7	7.5	35.8
Internet	1.6	-	1.6	-

Source: Field survey, 2011

It was noted that most of the information sources provided rural dwellers with useful information on the neglected and underutilized plants but not on a regular basis, with the exception of Radio and Friends/Relatives. However, rural dwellers in the study area have low access to sources of information on the use of neglected and underutilized plant species.

#### **Benefit of neglected and underutilized plant species**

The benefits of neglected and underutilized plant species were examined among the rural dwellers in the study area. The result depicted in table 3 shows that the most notable benefits are additional income with 89.2%, food security (75.8%) and poverty alleviation (62.5%). This result shows that the majority of rural dwellers engaged in the utilization of these plants for basic needs.

**Table III: Percentage distribution of respondents based on benefit of neglected and underutilized plants (n=120).**

Benefits	Yes (%)	No (%)	Non-response (%)
Poverty alleviation	62.5	31.7	5.8
Soil fertility	39.2	41.6	19.2
Biodiversity conservation	47.5	39.2	13.3
Additional income	89.2	10.8	-
Food security	75.8	24.2	-
Balance diet	60.8	32.5	6.7
Job opportunity	59.2	45	3.3

Source: Field survey, 2011

#### **Knowledge of use of neglected and underutilized plant species**

Knowledge of use of neglected and underutilized plant species among respondents was measured by asking them to indicate true or false to the fifteen knowledge questions presented to them. The knowledge questions were prepared from the literature and pre-test stage of the study. The highest, lowest, and mean scores were obtained. The highest score for knowledge of use of neglected and underutilized plant species was 15 and the lowest score was 0, while the mean score was 9.2. Therefore, all the respondents having scores below 9.2 were categorized as having low level of knowledge on use of neglected and underutilized plants, while respondents having scores

of 9.2 and above were categorized as having high level of knowledge of use of these plants.

Majority (70%) of the respondents was highly knowledgeable about use of neglected and underutilized plant species (score of 9.2-15), while the remaining respondents (30%) were having a low level of knowledge on use of these plants (Score of 0-9.1). The implication is that the rural dwellers have good knowledge of use of neglected and underutilized plant species, which could influence more cultivation and use of these plants, if they are encouraged and motivated.

#### **Uses of neglected and underutilized plants**

Table 4 shows the uses of neglected and underutilized plant species in the study area. The most available plants are *Solanum americanum* (85%) and Mushroom (81.7%). The reason these are the most prominent may be because they constitute to the level of the food

intake either as food ingredient or as fruits. However, *Vitellaria paradoxa* (20.8%), *Spondias mombim* (32.5%) and *Phaseolus lunatus* (35.8%) were not prominent, possibly because they attract low level of income.

**Table IV: Percentage distribution of respondents based on uses of neglected and underutilized plants**

List of neglected and underutilized plants	Local names in Yoruba	Food consumption (%)	Medicinal feed (%)	Animal feed (%)	Never
<i>Aframomum melegueta</i>	Atare	0.8	42.5	12.5	44.2
Bitter kola	Orogbo	36.7	41.7	-	21.6
Bush mango	Oro	71.7	2.5	20	5.8
<i>Calotropis procera</i>	Bomubomu	4.1	9.2	39.2	47.5
<i>Cucurbita pepo</i>	Elegede	52.5	10.0	0.8	36.7
<i>Latuca teraxacifolia</i>	Yanrin	57.5	29.2	13.3	-
<i>Megaphrymum macrostachym</i>	Ewe gbodogi	44.2	9.2	19.1	27.5
<i>Momordica charantia</i>	Ejinrin	-	51.6	15.9	32.5
Mushroom	Olu	74.1	24.2	1.7	-
<i>Ocimum gratissimum</i>	Efinrin	61	37.3	-	1.7
<i>Phaseolus lunatus</i>	Awuje	34.1	4.2	4.2	57.5
<i>Solanum americanum</i>	Efo odu	85	9.5	-	5.5
Sour orange	Osan gaingain	40.8	44.2	-	15
<i>Spondias mombim</i>	Iyeye	53.3	24.2	-	22.5
<i>Vitellaria paradoxa</i>	Oori	40.8	19.2	40	-

Source: Field survey, 2011

### Testing of hypotheses

**Hypothesis one (Ho<sub>1</sub>):** There is no significant relationship between the rural dwellers personal characteristics and use of neglected and underutilized plant species.

A Chi-squared test indicated that there was a significant ( $\chi^2 = 17.272$ ,  $P = 0.002$ ) relationship between rural dwellers' level of education and use of

neglected and underutilized at 0.005 level of significant. However, age ( $\chi^2 = 5.208$ ,  $P = 0.391$ ), sex ( $\chi^2 = 1.734$ ,  $P = 0.42$ ) and Marital status ( $\chi^2 = 1.522$ ,  $P = 0.467$ ) were not significantly related to the use of neglected and underutilized plants by rural dwellers. The significance of educational attainment indicates that education affect the promotion of use of neglected and underutilized plants by rural dwellers (Table 5).

**Table V: Chi-square analysis showing relationship between personal characteristics and use of neglected and underutilized plants.**

Variable	$\chi^2$	Df	Probability	Remark
Age	5.208	5	0.391	Not significant
Sex	1.734	2	0.42	Not significant
Marital status	1.522	2	0.467	Not significant
Educational attainment	17.272	4	0.002	Significant

Source: Field survey, 2011

**Hypothesis one (Ho<sub>2</sub>):** Regression analysis of the contribution of the level of education, sources of information, benefit of neglected and under-utilized plants among rural dwellers to their uses of such plants is presented in Table 6. The table reveals that of all the factors, respondents sources of information ( $\beta =$

1.148) contributed most significantly to the dependent variable. This implies that the level of exposure of rural dwellers to information on the various potentials of neglected and underutilized plants influenced the extent to which they were utilised in the study area. However, the non-significant contribution from

respondents' level of education may be an indication that higher education is not a guarantee for exposure to information of the usefulness of these plants. This

could imply that respondents obtained information from other information sources apart from formal education.

**Table VI: Multiple regression analysis of uses of neglected and underutilized plants.**

Model	Unstandardized Coefficient		Unstandardized coefficient	T	Significant
	B	Standard errors			
			Beta		
Level of education	1461.72	2464.94	0.072	0.593	0.555
Sources of information	29461.73	7192.66	1.148	4.096	0.000
Benefits	27339.3	5500.96	1.046	4.970	0.000
Knowledge	23147.04	5465.59	0.711	4.235	0.000

## CONCLUSION AND RECOMMENDATIONS

Based on the findings of this study, it can be concluded that rural dwellers were mostly men, married and not educated. Neglected and underutilized plant species served as additional income, helps in ensuring food security and alleviating poverty among rural dwellers in the study area. The rural dwellers had access to information on utilization of neglected and underutilized plants through various sources of which

only radio and GSM provided them with information on regular basis. The most preferred sources of information on utilization of neglected and underutilized plants are radio and agricultural extension agents. Majority of rural dwellers had good knowledge of utilization of neglected and underutilized plants in the study area.

Based on the conclusion of this study, the following recommendations are made:

1. Rural dwellers should be encouraged to be actively involved when providing training on cultivation and utilization of neglected and underutilized plants in the study area.
2. Sensitization programmes on cultivation and utilization of neglected and underutilized plants should use respondents' preferred sources of information like radio and extension agents in local languages.
3. Rural dwellers should be motivated through credit facilities and series of training on cultivation and utilization of neglected and underutilized plants in order to ensure sustainable production of these plants

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