

Ethnobotany of the indigenous leaf vegetables of Southwest Nigeria

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Abstract. During the early and late seasons of 2000 and 2001, surveys were carried out to compile the under-exploited indigenous leaf vegetables of Southwest Nigeria for the purpose of conservation, widening the genetic base and increasing food varieties. Six States, i.e. Oyo, Ondo, Osun, Edo, Delta and Ekiti, that constitute the Southwest Nigeria, were covered during the survey. Ten Local Government Areas (LGAs) were selected per State. Fifty farmers were also selected per LGA based on some set criteria and interviews were directly conducted in addition to administering questionnaire. Results showed that the most common under-exploited indigenous leaf vegetables in

Southwest Nigeria are *Adansonia digitata*, *Amaranthus viridis*, *Ceiba pentandra*, *Celosia argentea*, *C. trigyna*, *Ceratotheca sesamoides*, *Corchorus olitorius*, *Crassocephalum bialfrae*, *C. crepidioides*, *C. togoense*, *Ipomoea aquatica*, *Justicia insularis*, *Launaea taraxacifolia*, *Momordica charantia*, *Ocimum gratissimum*, *Piper umbellatum*, *Sesuvium portulacastrum*, *Solanum nigrum*, *Struchium sparganophora*, *Talinum triangulare*, *Telfairia occidentalis*, *Vernonia amygdalina*, and *Vitex doniana*. The local culinary and medicinal uses, growth habit, and morphological intraspecific variability of the vegetables are discussed.

Key words: Endangered species, Ethnobotany, Indigenous species, Nigeria, Vegetables

INTRODUCTION

There is at present a serious threat to genetic diversity as a result of genetic erosion. Vegetables are among the most threatened plant diversity. Over the years the indigenous leaf vegetables have been neglected by research and development process. In all discussions of the status of food in Nigeria, indigenous leaf vegetables often disappear from mention. It has been documented that indigenous leaf vegetables compare favourably with the routinely cultivated leaf vegetables both in terms of leaf yield and nutrient composition (ADEBOOYE 1996). It was reported by the WORLD RESOURCES INSTITUTE (1992) and FAO (1991) that tropical forests are vanishing at an estimated rate of 17 million hectares annually: an area roughly the size of Tunisia or Uruguay and larger than England and Wales. Globally, about 16 million hectares of forest, an area roughly the size of Nepal, are cut, bulldozed or burned each year (WORLD WIDE FUND FOR NATURE 1996). Asia is

losing its forest fastest, at a rate of 1.2% annually, while Latin America is losing 0.9% annually and Africa, 0.8%. If the current trend continues, most tropical forests will soon be severely damaged or even completely destroyed.

After about 10,000 years of settled agriculture and the discovery of some 50,000 varieties of edible plants, just 15 plants provide 90% of the World's food energy intake. Three of them (rice, wheat and maize) are the staple foods of about 4 billion people scattered all over the World (FAO 1995). Dependence on only a few crops can be dangerous because of disease outbreak as it happened to Irish potato in 1840 (POINTING 1991).

In Nigeria there is an awareness about the loss of indigenous leaf vegetables as a result of neglect by research and development, fast rate of forest destruction for industrial development and environmental degradation due to pollution as in the Niger Delta. Nigeria is a signatory to the Convention on Biological Diversity (CBD) (UNEP 1994) which calls for effective organisation,

management, and use of biodiversity information. Articles 6, 7 and 8 of the CBD require the ratifying countries to develop national strategies, plans and programmes for the conservation and rational use of biological resources.

It is against this background that this survey was designed to collect information on indigenous under-exploited leaf vegetables of Southwest Nigeria with a view to identifying the species available, the species that have disappeared, their uses and the variation among the species.

MATERIALS AND METHODS

During the early and late seasons of 2000 and 2001, surveys were carried out to collect information on the under-exploited indigenous leaf vegetables of Southwest Nigeria. The Southwest Nigeria lies between 4° and 9° 20' N and 2° 40' and 7° E. The vegetation is divided into three distinct zones, i.e. mangrove forest, lowland rainforest and forest-savanna. Six states, i.e. Oyo, Ondo, Osun, Edo, Delta and Ekiti, were randomly selected for the survey.

Ten Local Government Areas (LGAs) were selected per state while fifty farmers were selected per LGA based on the following criteria: (1) evidence of effective participation in farming; (2) evidence of familiarity with the local names of the plants; (3) age between 40 and 70 years; (4) evidence of formal education at least to primary school level.

A summary of the content of questionnaire used is as follows: Which indigenous leaf vegetables do you eat? Which ones don't you eat and why? How do you prepare the plant for consumption? What are the medicinal uses of these plants? Do you plant these vegetables? How do you plant cuttings or seeds? Do you sell these vegetables? Where do you gather them? Do you gather them with ease? How much do you sell a measure of the vegetable? Any restriction on consumption due to family background, age or sex? Are there variants of these vegetables?

The analysis of the questionnaire was done using simple statistics of measure of dispersion and central tendency.

RESULTS AND DISCUSSION

Table 1 reports species and family names, growth habits and medicinal uses of the indigenous leaf vegetables that were collected by the authors with the help of the farmers during the survey. Twenty four indigenous leaf vegetables were collected. Of the total, seven were members of the family Asteraceae, three of Amaranthaceae, two each of Bombacaceae, Cucurbitaceae, Portulacaceae and Solanaceae, and one each of the other families. Results showed that about 67% of the vegetables were erect shrubs or herbs, 17% were climbers, 12% were woody and 4 were creepers. Several studies have shown that indigenous leaf vegetables are distributed widely over various botanical families and that they have different growth habits (CHWEYA 1997; OKIGBO 1977; OKAFOR 1979)

The study showed that each leaf has a medicinal property, at least, and that the vegetables can be put to more uses medicinally if empirical laboratory tests are carried out on them. ATTA-UR-RAHMAN & CHOUDHARY (2001) stated that about 150 known drugs derived from over 100 species of plants are currently on the market today worldwide. According to the two workers, recent estimates showed that 25% of all prescribed medicines in the developed countries contain ingredients derived from plants and roughly 80% of the World's population living in developing countries relies on herbal remedies for their primary care needs. In Southwest Nigeria, where this study was carried out, about 85% of the population lives in rural area and they use herbal sources for treatment of ailments and diseases. Most of the vegetables specimens collected were found in herbalists gardens during the study. This lends credence to the view that the food value of the vegetables is as important as the medicinal value.

The claims of the farmers of Southwest Nigeria as regards the medicinal uses of some of the vegetables sound unscientific. However, in Africa, each leaf is known to have both the physical and spiritual essence. The spiritual essence is actualised when the traditional "juju men" invoke some unseen spirits. There is no scientific way of testing the invocation of spirit and this has limited the believe in the claims of the farmers.

Table 1 - Names, growth habit and medicinal uses of indigenous leaf vegetables of Southwest Nigeria.

Species	Family	Growth habit	Medicinal uses
<i>Justicia insularis</i> T. Anders	Acanthaceae	Erect shrub	Part of ingredient used for making 'juju' to heal insanity.
<i>Amaranthus viridis</i> L.	Amaranthaceae	Erect shrub	Eaten to relieve constipation.
<i>Celosia argentea</i> L.	Amaranthaceae	Erect shrub	Part of ingredient for making 'juju' that can change fortune for the better.
<i>Celosia trigyna</i> L.	Amaranthaceae	Erect shrub	Leaf eaten to relieve constipation.
<i>Crassocephalum bialfrae</i> (Olive and Heirne) S. More	Asteraceae	Climbing shrub	Leaf juice extract used for stopping bleeding. Also used for sore eyes.
<i>Crassocephalum crepidioides</i> (Benth) S. Moore	Asteraceae	Erect shrub	Used for a harmful 'juju' that farmers were not willing to disclose.
<i>Crassocephalum togoense</i> L.	Asteraceae	Erect shrub	Used for a very harmful 'juju' that farmers were not willing to disclose.
<i>Launaea taraxacifolia</i> (L.) Cars	Asteraceae	Erect shrub	Leaf extract used as antidote to snake bite.
<i>Ocimum gratissimum</i> L.	Asteraceae	Erect shrub	Leaf juice extract used to treat pile, male impotency and female infertility.
<i>Strachium sparganophora</i> L.	Asteraceae	Woody	Leaf juice extract used to treat diarrhoea and dysentery.
<i>Vernonia amygdalina</i> Del.	Asteraceae	Woody	Leaf juice extract used to treat diabetes, diarrhoea and dysentery.
<i>Adansonia digitata</i> L.	Bombacaceae	Woody	Ingredient for a 'juju' to aid in finding a wife.
<i>Ceiba pentandra</i> Gaertn.	Bombacaceae	Erect herb	Used for invoking spirits.
<i>Ipomoea aquatica</i> Lam.	Convolvulaceae	Creeping shrub	Unknown
<i>Momordica charantia</i> L.	Cucurbitaceae	Climbing shrub	Leaf juice extract used to treat pile and male impotency.
<i>Telfairia occidentalis</i> Hook. f.	Cucurbitaceae	Climbing shrub	Leaf used for management of sickle cell anaemia. Root exudate is a potent poison.
<i>Ceratopthea sesamoides</i> E. Mey	Pedaliaceae	Erect shrub	Leaf is part of ingredient used for reversing barrenness in female.
<i>Piper umbellatum</i> L.	Piperaceae	Climbing shrub	Seeds consumed to cure pile.
<i>Sesuvium portulacastrum</i> L.	Portulacaceae	Erect shrub	Leaf juice is good for treating wounds.
<i>Talinum triangulare</i> L.	Portulacaceae	Erect shrub	Used for treating stomach ulcer.
<i>Solanum nigrum</i> L.	Solanaceae	Erect shrub	Young leaves and fruits are used as remedy for colic, flatulence and as a sedative.
<i>Solanum scabrum</i> Mill.	Solanaceae	Erect shrub	A pregnant woman who eats enough of this vegetable will recuperate fast after delivery.
<i>Corchorus olitorius</i> L.	Tiliaceae	Erect herb	Boiled fresh leaf used to treat fungi infection on human body.
<i>Vitex doniana</i> L.	Verbenaceae	Erect shrub	Used for a 'juju' to neutralise witchcraft attacks.

Nonetheless, we cannot dismiss with a wave of the hand the claims of the farmers. It is known with certainty that the Ayurvedic, Unani, Siddha, Tibetan and Chinese medicine have their roots in the use of plants and there are spiritual factors attached to the efficacy some of the medicines.

Table 2 shows the status of some indigenous leaf vegetables that are consumed in Southwest Nigeria. Results showed that about 46% of the vegetables are wild, 13% semi-wild, 8% protected, 13% weedy and 20% cultivated. Several stu-

dies have documented the status of the indigenous leaf vegetables cultivated in different parts of Africa. For example, RUBAIHAYO (1997), OKAFOR (1983), ABBIW (1990) and SECK (1997) have documented that most of the indigenous leaf vegetables of African origin grow in the wild and that they are endangered and decimated. The vegetables that grow in the wild have not gone through any selection or breeding process and their quality has not been improved through science. The few stands of these vegetables remaining

Table 2 - Status of the indigenous leaf vegetables collected in Southwest Nigeria.

Species	Status
<i>Justicia insularis</i>	Wild, not easily available
<i>Amaranthus viridis</i>	Cultivated, available
<i>Celosia argentea</i>	Cultivated rarely, available
<i>Celosia trigyna</i>	Weedy, not easily available
<i>Crassocephalum biafrae</i>	Wild, not easily available, disappearing
<i>Crassocephalum crepidioides</i>	Wild, not easily available
<i>Crassocephalum togoense</i>	Wild, disappearing
<i>Launaea taraxacifolia</i>	Wild, disappearing
<i>Ocimum gratissimum</i>	Protected, available
<i>Struchium sparganophora</i>	Semi-wild, easily available
<i>Vernonia amygdalina</i>	Cultivated, available
<i>Adansonia digitata</i>	Wild, rare
<i>Ceiba pentandra</i>	Semi-wild, available
<i>Ipomoea aquatica</i>	Wild, available in mangrove forest
<i>Momordica charantia</i>	Wild, disappearing
<i>Telfairia occidentalis</i>	Cultivated, available
<i>Ceratotheca sesamoides</i>	Weedy, relatively available
<i>Piper umbellatum</i>	Wild, not easily available
<i>Sesuvium portulacastrum</i>	Weedy, available
<i>Talinum triangulare</i>	Protected, available
<i>Solanum nigrum</i>	Semi-wild, available especially from herbalists
<i>Solanum scabrum</i>	Wild, rare
<i>Corchorus olitorius</i>	Cultivated, available
<i>Vitex doniana</i>	Wild, rare

in the tropical forests need to be protected so that they are not lost finally.

Table 3 shows that of all the vegetables collected, only seven have morphological variants clearly distinguishable. The characters used in the identification of the vegetable variants include leaf and stem colour, leaf shape, pubescence of leaf and stem, leaf serration and fruit colour. Previously, ADEBOOYE (2001) in Nigeria and ONYAGO (1993) in Kenya showed that differences in nutrient contents of the variants of some indigenous leaf vegetables occur. There is therefore the opportunity that variants of these vegetables, if properly utilised, will contribute to breeding programme and the improvement of these vegetables.

Several studies have shown that indigenous

Table 3 - Intraspecific morphological variability among the indigenous leaf vegetables of Southwest Nigeria

Species	Variants
<i>Amaranthus viridis</i>	Broad leaf with green inflorescence Broad leaf with purple inflorescence Tiny leaf with green inflorescence
<i>Crassocephalum biafrae</i>	Red stem Green stem
<i>Launaea taraxacifolia</i>	Broad leaf Needle-shaped leaf
<i>Ocimum gratissimum</i>	Broad leaf Tiny leaf
<i>Talinum triangulare</i>	Green stem Red stem
<i>Solanum nigrum</i>	Green berry at ripening Orange berry at ripening Black berry at ripening
<i>Corchorus olitorius</i>	Broad leaf Triangular leaf with serrated margin Needle-shaped leaf

plants play a key role in medical research and genetic improvement of cultivated plants. Biodiversity is essential to agriculture.

The present neglect of indigenous plants is likely to encourage genetic erosion of the wild plants and also lead to the extinction of the indigenous food plants. To enhance food security, scientists must find a way of rediscovering traditional food plants that modern agriculture has neglected. This must be followed by rigorous research attention on breeding and improvement of these plants for the benefit of mankind.

As a conclusion we point out that (a) indigenous plants are still playing major role in determining the trajectories of changing culture, (b) the wisdom of indigenous people can not only provide insight into human condition but also enrich modern culture, and (c) conservation of plant biodiversity and indigenous plant lore is in the interest of the international community.

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