

Wild vegetable use by Vhavenda in the Venda region of Limpopo Province, South Africa

Uso de vegetales silvestres por los Vhavenda en la región de Venda en la Provincia Limpopo, Sudáfrica

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Abstract. We studied the marginal utilization of 40 wild vegetable species in the Venda area of Limpopo Province (South Africa). Use of these vegetables with various purposes by humans is indicated.

Keywords: Traditional use; Venda; Wild vegetables; South Africa.

Resumen. Se estudiaron 40 especies de plantas silvestres en el área de Venda de la Provincia de Limpopo (Sudáfrica). Se indica el uso de éstas especies vegetales con varios propósitos para los humanos.

Palabras clave: Uso tradicional; Venda; Vegetales silvestres; Sudáfrica.

INTRODUCTION

The Vhavenda people are inhabitants of southern Africa, living mostly near the South African-Zimbabwean border. Wild vegetables have been used since ancient times by native people all over the world. Before domestication of agriculture, humans depended on wild plants and animals for their daily needs. They lived a nomadic life without permanent households, i.e. they moved from one place to another depending on availability of natural resources (Fox & Norwood Young, 1982).

After the arrival of white men, who colonized South Africa, there was a drastic change in the way of living in many human communities (Simon & Lamla, 1991): South African people started to depend more and more on exotic medicines, food, etc. For example, food trading stores were introduced. They started to sell exotic vegetables, fruits, salt, sugar, castor oil and 'luxurious items'. Men went to work on gold and coal mines in Johannesburg to support their families (Simon & Lamla, 1991). In the mines, native people used exotic food items, leading to deterioration of the use of indigenous plants (Alberti, 1968).

In addition to the economic aspect of the reduction in the use of native wild vegetables, there was a social problem associated with it. Grivetti (1975) noted the decline in the use of native fruits, attributing it to modern education. However, this decline might also be caused by the deterioration of veld and forests (Lubbe & Maree, 1973). Veld fires, grazing and/or erosion are major causes of the decline and local extinction of many species in some environments. Only a few workers attempted to record potential uses of wild vegetables in South Africa (Rose, 1972; Lubbe & Maree, 1973; Rose & Jacot Guillarmod, 1974; Fox & Norwood Young, 1982; Wehmeyer & Rose, 1983; Mabogo, 1990; Bhat & Rubuluza, 2002; Megrino, 2004). This study recorded wild vegetable richness and its potential economic importance in the Venda region of Limpopo Province, South Africa. One of our major objectives was to promote an even utilization among people of useful, edible wild plants.

MATERIALS AND METHODS

The project was conducted in the Venda region of Limpopo Province. Information was collected from a series of interviews with villagers, rural and urban people. Field notes were recorded for the wild herbs and their uses, following Bhat et al. (1990) and Martin (1995). The collected plant specimens were identified and stored at the University of Venda Herbarium, in the Department of Botany.

RESULTS

We recorded the use of 40 wild vegetables belonging to 20 angiosperm families in the predominantly Vhavenda occupied region of South Africa. Plants of all species were partitioned

into leafy vegetables, flowers, fruits and tubers (Tables 1 and 2). Consumption level of these wild vegetables varied with the study area. The interviews were conducted with interest on wild fruits and vegetables.

DISCUSSION AND CONCLUSION

During field work, we faced the problem of naming these food plants. This was because the same plant was known by different names and uses in different regions. It was important to collect names of plants in a certain area, and then collect the specimens in that area. This made it easier because people of the community are aware of the names and description details as a result of the similarities in language. Long talks in the field are time consuming, but resulted in sampling the correct plants and fewer misunderstandings and misinterpretations. The most difficult aspect while conducting the research was the language. In many cases, researchers were unable to communicate directly with communities as they did not speak the same language. This not only hampered the research work but also constrained communities from discussing some issues openly with the researchers.

There were variations in the consumption level of wild vegetables according to the study area. The high percentage of wild vegetables (leafy vegetables) in our study came from adult women, because they prepare food at home for the family members, and they are the major collectors of wild vegetables.

Since the study plants were underutilized, they have to be popularized so that their use can be fully beneficial. Vitamin A, Iron, Calcium and protein have been found in all species of wild vegetables in Africa (Weber & Van Staden, 1997). Motivation for the use of wild vegetables will not only help the poor, unemployed people, but will also increase the selection opportunities for the rich. Increased use of these wild vegetables will encourage farmers to produce them on a large scale, which will also create new job opportunities.

The high levels of unemployment and lack of resources have led to poverty and malnutrition of Limpopo Province people. Plants in this location are underutilized because they are not fully used even in areas where these plants are freely available. In some areas, however, several of these plants are popular, while in other areas they are not.

Species such as *Cucurbita pepo*, *Capsicum annum*, *Colocasia esculenta*, *Ipomoea batatas* and *Vigna unguiculata*, used as vegetables, fruits, underground stems, root tubers and young fruits, need to be popularized. Many of these species were found in all study areas; this makes it easier to educate the communities who live in those areas for the maximum utilization of the wild vegetables. Wild plant species were found to have a higher nutritional value than cultivated genotypes (Wehmeyer, 1966). Vitamin A, Iron, Calcium and protein have been found in all species of wild vegetables in Africa (Weber

Table 1. Use and preparation of wild vegetables by Vhavenda, and vegetables that retain their color when cooked. *V = Venda; E = English.
Tabla 1. Uso y preparación de vegetales silvestres por los Vhavenda, y vegetales que retienen su color cuando son cocidos. *V = Venda; E = Inglés.

Scientific name	Family	Common name	Edible organs	Method of collection and use
<i>Abelmoschus esculentus</i> (L.) Moench. (MMQ 042)	Malvaceae	Delelemandande *(V) Ladys finger, Okra *(E)	Leaves	Herbaceous plant with hairy leaves. Leaves are hard, but when combined with other vegetables and cooked they become more palatable.
<i>Amaranthus cruentus</i> L. (MMQ 039)	Amaranthaceae	Gango (V) Red amaranth, Wild amaranth, Purple Amaranth, Cockscomb (E)	Leaves	Leaves are collected by women. Tender stems and leaves are used as relish; sometimes mixed with other vegetables such as tender pumpkin leaves. Cooked leaves are also dried on a tin sheet and stored for future use.
<i>Amaranthus hybridus</i> L. (MMQ 038)	Amaranthaceae	Thebe (V) Cockscomb, Pigweed (E)	Leaves	Same as above.
<i>Amaranthus dubius</i> C.Mart. ex Thell. (MMQ 013)	Amaranthaceae	Vowa (V) Smooth amaranthus, Smooth pigweed (E)	Leaves	Plants grow either in agricultural or in forest land. It is mostly found during the rainy months of the summer season.
<i>Corchorus tridens</i> L. (MMQ 011)	Tiliaceae	Delele (V) Wild jute plant (E)	Leaves	Plants are mostly found during the summer season in agricultural fields. Fresh leaves are used as pot herbs. Dried leaves are known as "mutshovhotshovho", which are stored for future use.
<i>Cucumis africanus</i> L.f. (MMQ 017)	Cucurbitaceae	Tshinyagu (V) Jelly melon, Bitter wild cucumber, Burstin beauty, African cucumber (E)	Leaves	Fresh leaves are cooked with other wild vegetables, and used as a side dish.
<i>Cucurbita pepo</i> L. (MMQ 014)	Cucurbitaceae	Thanga (V) Pumpkin (E)	Leaves Flowers Fruits	Long creeping plant with twining stems and round leaves. Leaves are cooked together with tender pumpkins and flowers. Sometimes, dried flowers are used as vegetables.
<i>Dicerocaryum zanguebaricum</i> (Lour.) Merr. (MMQ 023)	Pedaliaceae	Museto (V) Devil's thorn (E)	Leaves	Perennial herb; fresh leaves are used as wild vegetables. It is mostly found in sandy soil.
<i>Grewia occidentalis</i> L. (MMQ 005)	Tiliaceae	Mulembu (V) Grew, Button wood, Four corners (E)	Leaves	This shrub is mostly found in the rocky areas. Rural women collect the young leaves in the field and use as wild vegetables.
<i>Hibiscus trionum</i> L. (MMQ 012)	Malvaceae	Delelemukhwayo (V) Bladder weed (E)	Leaves	Herbaceous plant found in damp places. Newly formed leaves are used as wild vegetables.
<i>Malva sylvestris</i> L. (MMQ 006a)	Malvaceae	Tshiteadvha (V) Cheese weed, Cheese weed mallow, Egyptian mallow, Marsh mallow (E)	Leaves	Herbaceous perennial plant with a rather pulpy tap root. Leaves are always green and face the direction of sunrays. Leaves are collected by the rural women and consumed as a side dish.
<i>Malva parviflora</i> L. (MMQ 006b)	Malvaceae	Tshiteadvha (V)	Leaves	This evergreen grows all year round and is usually found in damp places. Leaves are used as wild vegetables.
<i>Momordica balsamina</i> L. (MMQ 003)	Cucurbitaceae	Tshibavhe (V) Bitter gourd (E)	Leaves	It is often added with other vegetables to give a plaque taste to side dishes.
<i>Momordica charantia</i> Descourt. (MMQ 047)	Cucurbitaceae	Mutshatshamabunyu (V)	Leaves	A vegetable with bitter taste. It is found all year round. The bitter leaves are cooked with other wild vegetables.
<i>Momordica foetida</i> Schumach. (MMQ 001)	Cucurbitaceae	Nngu (V)	Leaves	Used as spice to the above vegetables to minimize its bitter taste.

<i>Obetia tenax</i> (N.E. Br.) Friis (MMQ 022)	Urticaceae	Muvhazwi (V) Mountain nettle (E)	Leaves	Multi-stem deciduous shrub found in the fields and veld, usually in rocky areas. Young and old leaves are collected, and consumed as vegetables.
<i>Tragia</i> spp. (MMQ 043)	Euphorbiaceae	Mbuwambuwane (V)	Leaves	Leaves are provided with stinging hairs. Care is required while gathering the leaves as they are irritating to the skin. Fresh leaves are used as potherbs.
<i>Trema orientalis</i> (L.) Blume (MMQ 007)	Ulmaceae	Mukurukuru (V) Trema, Pigeon wood (E)	Fresh Leaves	It is a shade tree with soft leaves. Mostly fresh leaves are cooked as the other vegetables.
<i>Urtica dioica</i> L. (MMQ 002)	Urticaceae	Dzaluma (V) Stinging nettle (E)	Leaves	This plant is generally found in rocky and wet areas. Young plants and leaves of stinging nettle have a flavor similar to spinach when cooked.

Table 2. Use and preparation of wild vegetables by Vhavenda, and vegetables that change color when cooked. *V = Venda; E = English.

Tabla 2. Uso y preparación de vegetales silvestres por los Vhavenda, y vegetales que cambian su color cuando son cocidos. *V = Venda; E = inglés.

Scientific name	Family	Common name	Edible organs	Method of collection and use
<i>Adenia digitata</i> (Harv.) Engl. (MMQ 033)	Passifloraceae	Dundu (V) Wild granadilla (E)	Leaves	This is a climber plant, and as such it grows intertwined with other plants. The plant grows well on hills and mountains. Young leaves are cooked and eaten with porridge.
<i>Amaranthus spinosus</i> L. (MMQ 026)	Amaranthaceae	Mukuluvhali (V) Pig Weed Spiny amaranth Thorny amaranth Thorny pigweed Thorny misbredle (E)	Leaves	Like several other related amaranths, this spiny amaranth is a wild food, plant in South Africa.
<i>Bidens bipinnata</i> L. (MMQ 025)	Asteraceae	Mushidzhi donga (V) Spanish needle sweet hearts (E)	Leaves	It is an annual, branched herb with stout tap roots. It is found in damp and cultivated areas. Leaves are collected and used as wild vegetables. Sometimes condiments made from ground-nuts and other nuts are added.
<i>Bidens pilosa</i> L. (MMQ 025)	Asteraceae	Mushidzhi (V) Black jack, Bur-mangold Spanish needle (E)	Leaves	It is an annual herb found in gardens and cultivated areas. Stems and branches have green or brown stripes. Leaves are harvested and consumed as wild vegetables.
<i>Capsicum annum</i> L. (MMQ)	Solanaceae	Phiriphiri (V) Small red pepper Serrano pepper (E)	Leaves Fruits	It is an annual plant with taproot that is used for mixing with porridge. The smooth leaves are cooked and used as potherbs. Fruits are added in all vegetables as condiments.
<i>Cleome gynandra</i> L. (MMQ 032)	Capparaceae	Murudi, Muruthu (V) African cabbage (E)	Leaves	This herb is mostly found in disturbed environments. Young stems and leaves are used as potherbs.
<i>Cleome monophylla</i> L. (MMQ 021)	Capparaceae	Mutohotoho (V) Spider plant, Spindle pot, Bastard mustard (E)	Leaves	The plant is an annual, erect herb with hairy stems. It is found in disturbed environments particularly in sandy areas. Used as potherbs.

<i>Colocasia esculenta</i> (L.) Schott (MMQ 028)	Araceae	Mufhongwe (V) Elephant's ear Taro Colocasia Cocoyam (E)	Leaves rhizoids	It is a robust herb plant with very large heart shaped leaves. The rhizomes and leaves are both harvested and used as a delicious vegetable. The fried rhizomes taste like potatoes.
<i>Ipomoea batatas</i> (L.) Lam. (MMQ 019)	Convolvulaceae	Murambo (V) Sweet potato (E)	Leaves Tubers	This plant is mostly found in cultivated areas. The leaves are cooked with other vegetables to make it more palatable. Tubers are also cooked in butter and consumed.
<i>Ipomoea obscura</i> (L.) Ker Gawl. (MMQ 018)	Convolvulaceae	Muduhwi (V) Wild petunia (E)	Leaves	It is an annual climber. Leaves are collected and consumed as wild vegetables.
<i>Nicandra physaloides</i> (L.) Gaertn. (MMQ 048)	Solanaceae	Tshirunnugudane (V) Apple of Peru (E)	Leaves	It is an herbaceous plant with spreading branches and ovate and waved leaves. It grows mostly in rocky loam soil. Leaves are consumed as wild vegetables.
<i>Oxygonum dregeanum</i> Meisn. (NMQ 029)	Polygonaceae	Muthanya (V)	Leaves	Erect annual herb with hairy stems found in disturbed environments, mostly in sandy areas. Leaves are used as potherbs.
<i>Pentarrhinum inspidum</i> E. Mey. (MMQ 015)	Asclepiadaceae	Phulule (V)	Leaves	It is a seasonal climbing plant found in mountainous areas. Leaves are collected by rural women and prepared with porridge.
<i>Pouzolzia mixta</i> Solms (MMQ 020)	Urticaceae	Muthanzwa (V) Soap nettle (E)	Leaves	Tree found in mountainous areas. Leaves are consumed as wild vegetable.
<i>Solanum nigrum</i> L. (MMQ 049)	Solanaceae	Xaxadi (V)	Leaves	Black nightshade is a short-lived perennial shrub, found in many wooded areas, and disturbed environments. Leaves are used as wild vegetables and have shown analgesic effects on toothache.
<i>Solanum retroflexum</i> Dunal (MMQ 024)	Solanaceae	Muxe (V)	Leaves	This is an annual plant. Leaves are consumed as wild vegetables like <i>S. nigrum</i> .
<i>Sonchus asper</i> (L.) Hill (MMQ 008)	Asteraceae	Shashe (V), Annual sow-thistle Common sow thistle Wild thistle (E)	Leaves	The fresh leaves are collected and consumed like spinach. It is generally not mixed with other leaves because it has a plaque taste.
<i>Tribulus terrestris</i> L.	Zygophyllaceae	Tsetwana (V) Goat head (E)	Leaves	The plant is found in sandy areas. Leaves are used as potherbs.
<i>Tribulus zeyheri</i> Sond.	Zygophyllaceae	Tseto (V)	Leaves	The plant is used as wild vegetable like <i>Tribulus terrestris</i> .
<i>Tropaeolum majus</i> L. (MMQ 046)	Tropaeolaceae	Bopa (V)	Leaves	This is a climbing herbaceous annual plant. Leaves are used as wild vegetables.
<i>Vigna unguiculata</i> (L.) Walp. (MMQ 027)	Fabaceae	Munawa (V) Cow pea (E)	Leaves, Fruits, Seeds	It is a robust annual creeper. The plant is propagated by humans during summer. Young terminal shoots, young soft leaves and unripe fruits are harvested and cooked as a side dish. Its fresh leaves are tasty and used as potherbs. Dry seeds are consumed like any other legumes.

& Van Staden, 1997). A specific example of high amounts of nutrients in all vegetables is for Vitamin A. *Amaranthus* sp. provides more Vitamin C than spinach.

Some of the study plant species can be toxic. The toxic characteristics are pronounced at certain plant phenological stages

and then disappear. This is the case with the fruit of *S. nigrum*. In some vegetables, these toxic features are destroyed after cooking. However, this is not the case in other plant species. Solving these problems should be addressed by biotechnologists as more food is required for the increasing world population.

Leaves of most wild vegetable species are consumed basically in the same way. For example, the leaves of *Sonchus asper* are chopped or crushed before they are cooked or mixed with other vegetables. The leaves are also used as side dishes. Other wild vegetables are used to flavor, while some provide a bitter taste to meals. These wild vegetables can be dried and stored for use when plants are not physiologically active. This helps when there are shortages in food resource supplies. There are three ways of drying the leaves: (1) hanging the leaves in the shade, or the entire plant on rafters until dry; (2) alternatively placing the leaves under light and shade conditions; (3) combining of methods (1) and (2): leaves are dried in a similar way to the first process for a few minutes, and then they are exposed to alternating drying in shade and sunlight. After drying, the wild vegetables must be still green in color to preserve their nutrients. Dried vegetables are stored in air-tight color containers to preserve their quality.

There is a need to encourage use of the study wild vegetables due to economic, social and other constraints facing Limpopo Province and the world overall. An important factor for legitimizing these plants even to the elite is by determining their nutritional value. Some educated people are *doubtful* in using these plants because they do not know their active components. The nutritional information will help utilization of these plants. Poor communities, who do not take advantage of these plants, will easily use them if they see people of higher classes consuming them.

Wild vegetables need to be popularized via multimedia to all sectors of the community, the rich and the poor. There are various ways of introducing these plants to the communities, such as demonstrative sessions of cooking and processing, publishing in scientific journals, magazines, news media, and the Farmers Weekly, which is read by a wide range of people.

ACKNOWLEDGEMENTS

We thank Mr. M.P. Tshisikhawe for the correction of Venda names.

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