The Bio-diversity of traditional vegetables of the Transkei region in the Eastern Cape of South Africa

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Received 13 August 2001, accepted in revised form 2 November 2001

The primary concern of this investigation was to study the marginal utilisation of inexpensive indigenous plants that are not normally cultivated or used for commercial purposes. The present investigation recorded the uses of 36 wild vegetables (‘imifino’) in the predominantly Xhosa occupied Eastern Cape (South Africa). The importance of these under-exploited wild vegetables cannot be overestimated.

Introduction

Before domestication or inversion of agriculture, human beings depended on wild plants and animals. They lived a nomadic life. This means they had no permanent households, i.e. they moved from one place to the other depending on availability of natural resources (Fox and Norwood Young 1982).

There was a drastic change in the way of living in many communities due to the arrival of whites who colonised South Africa (Simon and Lamla 1991). South African people started to depend more and more on exotic medicine, food etc. which came with white people. For food, the trading stores were introduced. They sold exotic vegetables, fruits and other items like salt, sugar, castor oil and ‘luxurious items’. Men went to work on gold and coal mines in Johannesburg so that they could support their families (Simon and Lamla 1991). In the mines, indigenous people were introduced to exotic food items and this led to the deterioration of the use of indigenous plants (Alberti 1968).

Apart from the economic aspect of the decline in the use of indigenous wild plants, there was a social problem associated with it. Grivetti (1975) noted the decline in the use of indigenous fruits and vegetables and attributed it to modern education. The decline is sometimes caused by the deterioration of veld and forests (Lubbe and Maree 1973). Veld fires, grazing, erosion etc. are the main causes of the decline and local extinction of many species in some environments. The literature review reveals that only a few workers have attempted to record the uses of wild vegetables in this region (Rose 1972, Lubbe and Maree 1973, Rose and Jacot Guillarmod 1974, Fox and Norwood Young 1982, Wehmeyer and Rose 1983). The present investigation was undertaken with a view to update and record the knowledge of bio-diversity of wild vegetables (‘imifino’) and its possible economic importance in the Eastern Cape.

Materials and Methods

The project was conducted in the thickly populated five districts of Eastern Cape: Butterworth (including Mazeppa Bay), Lusikisiki, Port St Johns, Tabankulu and Umtata. The survey was performed 4 times during different seasons in a period of one year. Information was collected through a series of interviews with elderly villagers, rural and urban people. Field notes were recorded on the wild vegetables and their uses, following the methodology of Bhat et al. (1990) and Martin (1995). Collected specimens were identified and stored at the Kei Herbarium of the Department of Botany, University of Transkei, Umtata, for future reference.

Results

With regard to the field work in this project, though many plants were collected, there were many problems associated with it. The most important being the difference in the naming of these food plants. If one collects information and names of plants before going to the field work, with a hope of collecting plants (which are already named, given characteristics, or consumed parts), one may come across the problems of new names and uses as the same plant will be known by different names and uses in different regions. The most negative factor when conducting research has been language. In most cases, people (researchers) are unable to communicate directly with communities as they don’t speak the same language. This does not only hamper
the research but also makes communities uncomfortable to discuss openly some issues with the researchers.

In the present investigation one of the authors (Rubuluzza) could communicate in the same language as people of the three research areas. This did not only make it easier to get the information needed, but also got help from people faster because in some cases it was unnecessary to obtain permission from community leaders for interviewing people. The results of this investigation/survey are given in Table 1. The families were alphabetical arranged and the data presented in the following sequence: botanical names/ voucher specimen number/ family/ vernacular names in Xhosa (X), Zulu (Z), plant part collected and the information on uses and method of use.

The plants collected are categorised into leafy vegetables, tubers and fruits. One study was conducted in two different areas with different languages and culture. The interviews were conducted with specific interest on wild fruits and vegetables. These included Isaqoni, Ficus sp. Physalis sp. and Chenopodium sp. Children mainly under the age of 6 are the major consumers of the indigenous fruits. With regard to the study conducted in three areas, Tabankulu, Butterworth and Umtata, the consumption level of Doughalis showed that all age groups of Tabankulu were not fond of the indigenous fruits. In other study areas, there were variations in the consumption level of these fruits.

The high percentage of wild vegetables (leafy vegetables) came from adult females because they prepare food at home for the other family members and they are the major collectors of wild vegetables. Another plant of great interest has led to poverty and malnutrition of Eastern Cape dwellers. The plants are identified as under-exploited and have led to poverty and malnutrition of Eastern Cape dwellers. The plants collected are categorised into leafy vegetables, tubers and fruits. One study was conducted in two different areas with different languages and culture. The interviews were conducted with specific interest on wild fruits and vegetables. These included Isaqoni, Ficus sp. Physalis sp. and Chenopodium sp. Children mainly under the age of 6 are the major consumers of the indigenous fruits. With regard to the study conducted in three areas, Tabankulu, Butterworth and Umtata, the consumption level of Doughalis showed that all age groups of Tabankulu were not fond of the indigenous fruits. In other study areas, there were variations in the consumption level of these fruits.

The leaves of most wild vegetable plants are consumed more or less in the same way. The leaves are chopped (or crushed in some types like Sonchus asper) and mixed with maize meal. The meal prepared in this way is traditionally called ‘isigwampa’. The leaves are also used as side dishes, and they are called ‘ilixa’. Some types of ‘imifino’ are used to give flavour and others provide a bitter taste to the meals.

The advantage of these wild vegetables is that they can be dried and stored for use during off season. This helps people when there are shortages in supplies of food resources. There are three ways of drying the leaves: the first one is by hanging the leaves, or the entire plant on rafters until dry. The second type is similar to the first one except that the parts picked are alternated equally both in light and shade. The third form of drying is for the plants with fleshy leaves, where the leaves are dried in a similar manner to the first method for a few minutes and then followed by the second method i.e. alternating drying in shade and sunlight.

When dried, the ‘imifino’ must still be green in colour to preserve their nutrients. The dried vegetables are stored in air tight colour containers to preserve their quality.

There is a dire need to introduce these plants and encourage their use due to economic, social and other conditions facing Eastern Cape and the world at large. Motivation for the utilisation will not only help the poor, unemployed people, but will also increase the choice of the rich. An important factor of ‘legitimising’ these plants even to the elite is by researching their nutritional value. Some educated people are sceptical in using these plants because they do not know their active components. The nutritional information will be the safety of utilisation of these plants. Poor communities, who are not exposed to these plants will easily use them if they see ‘higher classes’ consuming them.

To be used on a large scale, the plants need to be popularised through multimedia to all sectors of the community, the rich and the poor. There are various ways of introducing the plants, such as publishing in scientific journals, magazines, news media, and the Farmers Weekly which is bought by a wide range of people. The increased use of these wild plants will encourage farmers to produce them on a large scale which will also create new job opportunities.
Table 1: Showing the uses and preparations of the wild vegetables by the Xhosa

| Family/species (voucher specimen) | Vernacular names in Xhosa (X) and Zulu (Z) | Part used | Method of collection and preparation |
|-----------------------------------|--------------------------------------------|-----------|-------------------------------------|
| **ACANTHACEAE**                  |                                            |           |                                     |
| *Crabbea* sp. (T.R. 109)         | Krakrisa (X)                               | Leaves    | The plant is found in disturbed environments. Small green leaves are used as a condiment, also mixed with other forms of ‘imifino’ and maize meal. Leaves are mixed with other forms of ‘imifino’, used as a relish. It is usually collected by rural females at any time of the day. |
| *Crabbea* sp. (T.R. 110)         | Krakrisa (X)                               | Leaves    |                                     |
| **AMARANTHACEAE**                |                                            |           |                                     |
| *Amaranthus asper* L.            | Isinama (X)                                | Leaves    | The leaves are pale when ready and collected by females in forests and in the veld. Tender stems and leaves are used as a relish. Sometimes they are mixed with other ‘imifino’ to give a better taste to meals. |
| (TR 131)                         |                                            |           |                                     |
| **ANACADIACEAE**                 |                                            |           |                                     |
| *Smoodingium argutum* E. Mey ex. Sond. (T.R. 086) | Intongwane (X)                           | Leaves    | A big tree with evergreen leaves found in the forest and fruits. Rural boys commonly consume this summer plant fresh. The fruits are small and red when ripe. |
| **APIACEAE**                     |                                            |           |                                     |
| *Centella coriacea* Nanfld. (T.R. 093) | Unongotyazane (X)                      | Leaves    | The plant has round leaves which spread to the ground. They are usually found on the grassy areas in the veld throughout the year. Rural people of all backgrounds, usually females, collect the leaves. These are mixed with other ‘imifino’ to add flavour to meals. |
| **ARACEAE**                      |                                            |           |                                     |
| *Colocasia antiquorum* Schott. (T.R. 088) | Idumbe (X), Amadumbe, Idumbe lomfula (Z) | Tubers    | This is a herb where tubers are used. It is found in gardens, the utilised part is a dark underground stem which is cooked like potato and eaten. All age groups and communities use this plant. |
| *Zantedeschia aethiopia* (L.) Spreng. (T.R. 090) | Ntebe (X)                                 | Leaves    | A herb with big leaves found growing on river banks. It is popular for its medicinal characters but also used as a food plant. It is found throughout the year, though most of the supply is in summer. The leaves are picked at any time of the day and are washed, cut and mixed with maize meal. |
| **ARALIACEAE**                   |                                            |           |                                     |
| *Cussonia* sp. (T.R. 106)        | Umsenge (X)                                | Tuber     | The plant is found in forests throughout the year and rural people, mostly males, consume the tuber. It is removed from the ground, the skin is peeled off and the watery part inside consumed. |
| **ARECACEAE**                    |                                            |           |                                     |
| *Hyphanae* sp. (T.R. 061)        | Imbombo (X)                                | Leaves    | The plant is found along swamps and muddy areas and fruits. Leaves are slender and sharp at the ends. Young males of the various communities eat the fruits as a main food item and these are consumed fresh. Leaves are eaten in the same way as sugar cane. |
| *Bidens pilos* L. (T.R. 053)     | Umhlabangulo (X)                          | Leaves    | The plant is found in gardens and fields. It is a summer plant with yellowish flowers. The leaves are cut and mixed with maize meal. All members of the rural community consume meals prepared from the plant. |
| *Gerbera ambigua* (Cass.) Gch. Bip. (T.R. 059) | Ulwimi lwenkomo (X)                       | Leaves    | The plant is found in the grassland during summer and the leaves are collected at any time of the day. The leaves are long and pointed and the plant bears whitish flowers. Boys consume the leaves raw (uncooked). The leaves are small with a white ventral side. These are collected, dried and used as a beverage. These are found throughout the year in the veld. They are rarely used but poor rural communities opt for them when commercial tea is not available. |
| *Helichrysum anthrixia* Mill. (T.R. 103) | Chola-Chola (X)                          | Leaves    | This is a herb with leaves spreading to the ground. It is found in gardens and fields during summer. It is occasionally used as ‘imifino’ by rural women. The leaves are mixed with maize meal after being washed and cut. |
| *Sonchus* sp. (T.R. 117)         | Intsheb / ebhokwe (X)                     | Herb      |                                     |
Table 1 cont.

| Family/species (voucher specimen) | Vernacular names in Xhosa (X) and Zulu (Z) | Part used | Method of collection and preparation |
|-----------------------------------|---------------------------------------------|-----------|-------------------------------------|
| **Sonchus sp. (T.R. 127)**        | Ihlaba (X)                                  | Leaves    | The plant is usually surrounded by grass and has broad, curved leaves. It is found in the veld during the rainy season. Poor rural women collect the leaves at any time of the day. These are washed and mixed with maize meal. |
| **Sonchus sp. (T.R. 116)**        | Umasigooqo (X)                              | Leaves    | The leaves arise from the ground and are bigger at the ends. They are surrounded by grass and found in the veld in summer. The leaves are washed, cut and boiled before they are mixed with maize meal. |
| **Sonchus asper** (L.) Hill. (T.R. 092) | Irhwabe (X)                                 | Leaves    | The curved leaves usually come up from the ground. The plant is found in gardens, veld and forests throughout the year. The better quality and quantity is always found during the rainy season. The leaves are multipurpose and are used as a side dish. Usually they are crushed and used as salad. |
| **Xanthium strumarium** L. (T.R. 051) | Ibhuzenge (X)                               | Leaves    | It is a summer plant with broad leaves with pronounced veins and bright flowers. It is found in the gardens and fields and its main collectors are poor rural females. It is rarely used because of the belief that it makes people insane. The leaves are washed, cut, boiled and mixed with maize meal. |
| **BRASSICACEAE**                  |                                             |           |                                      |
| **Raphanus** sp. (T.R. 108)       | Manyolo (X)                                 | Leaves    | The plant has a thin, tall stem with small flowers. These are found in the veld and forest in summer. Rural women collect the plant to use it as a pot herb. |
| **Raphanus nasturtio** aquatica L. (T.R. 089) | Iwatane (X)                                 | Plant     | This is an aquatic plant with small leaves that are spherical. It is collected during the day by adult females who are the main consumers. The plant is used as a side dish or used by mixing with other forms of ‘imifino’. |
| **Sisymbrium capense** Thumb. (T.R. 131) | Uhlalani (X)                                |          | The plant is found in disturbed environments, usually on the sides of the roads and forests. The leaves are slender and curved. These are mixed with other forms of ‘imifino’ and maize meal. |
| **CELASTRACEAE**                  |                                             |           |                                      |
| **Catha edulis** (Vahl) Forssk. ex Endl. (T.R. 102) | Iqwaka (X)                                  | Leaves    | The leaves are collected during the day and are always green. They are mixed with maize meal. Poor rural females collect these leaves in fields and forests during summer. |
| **CHENOPODIACEAE**                |                                             |           |                                      |
| **Chenopodium album** L. (T.R. 052) | Imbikicane (X)                              | Leaves    | This is one of the most important wild vegetable plants because it has been found to contain mostly all essential nutrients. The leaves are boiled with maize meal. It is a summer plant that is collected by poor rural women. |
| **CONVOLVULACEAE**                |                                             |           |                                      |
| **Convolvulus arvensis** L. (T.R. 111) | Ibopha (X)                                  | Leaves    | The plant is a climber and as such it grows intertwined with other plants. This is a rarely used plant but those who consume it collect the leaves in the forest and the veld. Adult rural females collect and consume this plant mostly in summer. |
| **CUCURBITACEAE**                 |                                             |           |                                      |
| **Coccinea** sp. (T.R. 054)       | Uswelentaka (X)                             | Leaves    | This is a creeper with heart shaped leaves, reaching ground level. The leaves are used as a side dish. Sometimes the leaves are cut and mixed with maize meal. Females are the best collectors. The plants grow in summer in fields, gardens and forests. The plant is propagated by humans during summer and autumn. The leaves are rough and whitish. The consumed parts, terminal shoots, the leaves and unripe fruits, are collected at any time of the day. These are cooked as a side dish or mixed with maize meal. |
| **Cucurbita pepo** L. (T.R. 097)   | Smithwane (X)                               | Terminal shoots and fruits |                                      |
### Table 1 cont.

| Family/species (voucher specimen) | Vernacular names in Xhosa (X) and Zulu (Z) | Part used | Method of collection and preparation |
|----------------------------------|-------------------------------------------|-----------|-------------------------------------|
| **CYPERACEAE**                   |                                           |           |                                     |
| *Mariscus cangestus* (T.R. 056)  | Ikhwane (X)                               | Leaf base | The plant is evergreen with slender leaves. These are found throughout the year near river banks. The leaves are pulled from the ground and the white part of the plant is consumed. |
| **LAMIACEAE**                    |                                           |           |                                     |
| *Leonotis* sp. (T.R. 113)        | Mfica-mficane (X)                         | Leaves   | The leaves of the plant spread to the ground on a grassy area. These are broad and whitish in colour. The leaves are usually collected by rural females at any time of the day. These are ground with maize meal before cooking. Sometimes they are used as a side dish. |
| **OXALIDACEAE**                  |                                           |           |                                     |
| *Oxalis* sp. (T.R. 016)          | Umuncwane (X)                             | Leaves   | The plant has pronged leaves with flowers in some cases. The leaves are collected at any time of the day and consumed by boys in summer. |
| **POLYGONACEAE**                 |                                           |           |                                     |
| *Rumex ecklonianus* L. (T.R. 114)| Idolo lenkonyane (X)                      | Leaves   | A herb with big leaves usually found in summer gardens and fields. The leaves are occasionally consumed by rural women and collected at any time of the day. The leaves and tender stemtips are washed, cut, boiled and mixed with maize meal. |
| **SOLANACEAE**                   |                                           |           |                                     |
| *Physalis viscosa* L. (T.R. 045) | Iguzu (X)                                 | Leaves and fruits | The leaves are used as a vegetable and fruits are eaten fresh. The fruits are collected at any time of the day, and leaves in the morning or afternoon. The plant is available during the rainy season in the forest, fields and veld. The leaves are used as relish. They are always cooked with other ‘imifino’ to give a bitter taste. |
| *Solanum nigrum* L. (T.R. 048)   | Umsobo (X)                                | Leaves and fruits | The plant is found in the fields and veld throughout the year, though the abundant supply is in summer. Rural women collect the leaves and boys consume the ripe fruits. The leaves are dried and stored for the use during off season. The fresh leaves are cut and mixed with maize meal. |
| *Solanum retroflexum* Dun. (T.R. 130)| Umsobo wehlathi (X)                      | Leaves and fruits | The plant is found in gardens, forests and veld. It has longer sized fruits and leaves than than *S. nigrum*. Used as for *S. nigrum*. |
| **STRELIZIACEAE**                |                                           |           |                                     |
| *Strelitzia nicolai* Regal and Koem. (T.R. 133)| Ikhamanga (X)                             | Seeds    | This is a banana like plant except it is tall. It is a winter plant found in forests. It is usually consumed by males of all ages. Seeds are consumed like maize and when dry, they are warmed on fire. |
| **URTICACEAE**                   |                                           |           |                                     |
| *Urtica urens* L. (T.R. 044)     | Ububazi (X)                               | Leaves   | The plant can be found as a cluster in some areas with reddish petioles. Usually females collect the plants. One should be careful when collecting the plant because the leaves are irritating to the skin. The plant is found in summer and winter near river banks, fields and forests. The leaves are mixed with other forms of ‘imifino’ and maize meal. |
| **URTICACEAE**                   |                                           |           |                                     |
| *Obetia tenax* (N. E. Br.) Friis. (T.R. 096)| Gcamche (X)                             | Leaves   | At maturity the plant is a large herb. Mostly females collect the leaves at any time of the day throughout the year. It grows naturally in the forests but people also plant it in their gardens. The leaves are collected with maize meal. One should be careful while collecting the leaves as they are irritating to the skin. |
| **VERBENACEAE**                  |                                           |           |                                     |
| *Lantana* sp. (T.R. 035)         | Ubuqholo bekati (X)                      | Berries  | The plant has big green leaves and bright flowers. It is found in forests and has big red berries that are consumed by boys. |
Acknowledgements — T Rubuluza would like to thank the FRD (now NRF) for funding the project. The help we got from every member of the community in study areas is highly appreciated. We also express our gratitude to Mr Wopula and Mr Mtoliyana (late) for their valuable assistance.

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Edited by AK Jäger
Eastern Cape, is in South Africa and stretches along the Indian Ocean between Western Cape and KwaZulu-Natal. The Eastern Cape province includes the former “homelands” of Transkei and Ciskei. With a long coastline on the Indian Ocean it offers great beaches as well as several very interesting National Parks. Its population is mainly Xhosa-speaking and the province is home to several of South Africa’s most important persons in the fight against Apartheid (e.g. Nelson Mandela, Thabo Mbeki, Steve Biko Plants of Southern Africa: an online checklist. South African National Biodiversity Institute. Potter, C.S., Randerson, J.T., Field, C.B., Matson, P.A., Vitousek, P.M., Mooney, H.A., Klooster, S.A., 1993. Terrestrial Ecosystem Production - a Process Model-Based on Global Satellite and Surface Data. The former Ciskei and Transkei homelands within the Eastern Cape Province of South Africa include the poorest regions within the country (Statistics_SouthAfrica, 2000). Subsistence farming is practiced by the majority of households within this region in A conjunction with limited economic activities and income from remittances and social grants (Adams et al., 1999; Perret, 2002; van Averbeke and Khosa, 2007).