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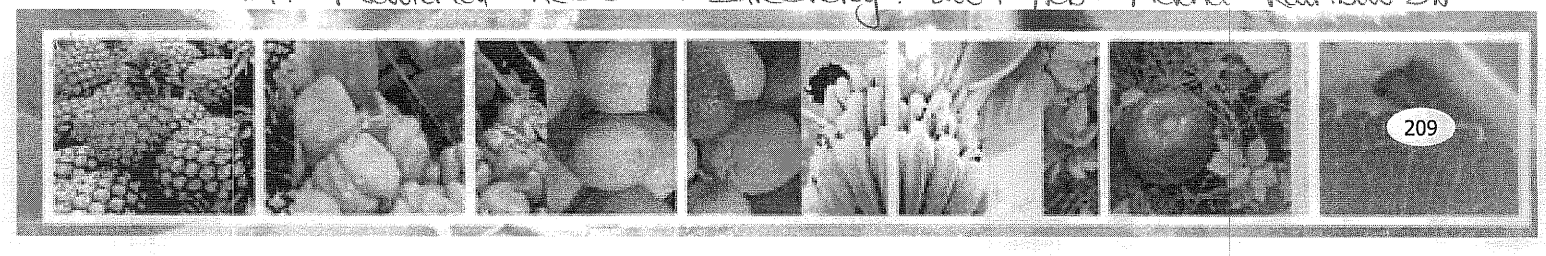


Field crops and horticulture

Indigenous Knowledge and African Vegetables

1. Overview

Indigenous Knowledge (IK) is the unique, traditional, local knowledge existing within and developed around specific conditions of women and men indigenous to a particular geographic area.

In some instances external or scientific knowledge is combined with indigenous knowledge during the innovation process. Consequently indigenous knowledge is dynamic and continually evolves and changes as it develops, influencing and being influenced by both internal and external circumstances and interaction with other knowledge systems. Given this state of affairs Indigenous knowledge is better termed as local knowledge; i.e. knowledge developed in a specific locality and knowledge that is not entirely traditional, although this might form the base, given external influences.

- At present, the vast majority of sub-Saharan Africans depend on resource-poor agriculture, without modern inputs, and rely almost exclusively on locally available resources for their livelihoods.
- Approximately 80% of the African population use traditional medicines to meet their health care needs.
- IK can help to alleviate poverty if it is effectively applied in agriculture and supported by appropriate technology interventions that consider peoples' circumstances.

Given the resource constraints experienced by research and extension officials and the distances they need to travel, many rural farmers and household producers rely heavily on their indigenous knowledge and local innovations in order to ensure some measure of food security and livelihood. Some of the plants they collect or produce using this knowledge are known as African Vegetables.

IK includes many aspects e.g. pottery and sculpture, games, baskets, mats, mural decorations etc. In this chapter we will be looking at the food security value. See separate chapter for an overview of the medicinal value.

2. African vegetables

Many rural communities in South Africa rely on foods that are harvested from plants growing in the wild or which occur as volunteer crops, by self-sowing themselves in household gardens and fields as seasonal volunteer crops. Depending on one's perspective some of these plants are construed as being weeds as they occur in places where they are not wanted. Occasionally these plants are actively cultivated.

Many of these plants are indigenous to Africa while others originated in other parts of the world but given their suitability to local social and environmental conditions they have been "naturalised" and internalised as important elements of local food culture and livelihood resources. The different parts of the plants that are used as foodstuffs include roots, tubers, stems, rhizomes, leaves, flowers, fruits, nuts, gums, berries, cereals and legumes. Generally, at least two parts of the plant can be eaten of which the leaves are almost always eaten.

In South Africa local people formerly ate a diet of meat, milk, wild cereals and wild plants, but the Pedi proverb "Meat is a visitor, but morogo a daily food" (morogo is the siPedi name for African leafy vegetables) has now become a reality for most rural people (Fox and Norwood Young, 1982).

Table 1 provides the common and scientific names of a number of African Vegetables found in South Africa along with the parts of the plants that can be consumed.

Common Name	Scientific Name	Edible Parts
Bambara groundnut	*Vigna subterranea*	Dried nuts/seeds
Groundnuts/Peanuts	*Arachis hypogaea*	Nuts/seeds
Cowpea	*Vigna unguiculata*	Leaves and seeds
Mung Bean	*Vigna radiata*	Seeds
Pigeon Peas	*Cajanus cajan*	Leaves and seeds
Taro/cocoyam	*Colocasia esculenta*	Tubers and leaves
Cassava	*Manihot esculenta*	Leaves and root
Marama bean	*Tylosema esculentum*	Tubers and seeds
Livingstone potato	*Plectranthus esculentus*	Tubers
Zulu round potato/ Hausa potato	*Solenostemon rotundifolius*	Tubers
Sweet potato	*Ipomoea batatas*	Leaves and tubers
Pigweed/Amaranth	*Amaranthus hybridus*	Leaves
Cat's whiskers / Spiderflower	*Cleome gynandra*	Leaves
Common labsquater	*Chenopodium album*	Leaves
Ethiopian Mustard / Ethiopian kale	*Brassica junceaBrassica carinata*	Young leaves
Black jack	*Bidens pilosa*	Leaves
Ethiopian/black nightshade	*Solanum nigrum*	Leaves
Jute/Jews Mallow	*Corchorus tridens*	Leaves
Pumpkin	*Cucurbita maxima*	Young leaves, young fruit, old fruit and flowers
Gem squash	*Cucurbita pepo*	Young leaves and ripe fruit

Table 1: Common African Vegetables found on South Africa

African Vegetables and Food Security

The indigenous knowledge associated with African vegetables and their importance for the food security of many rural South Africans warrants further discussion. This is especially in light of food security activities emphasising food production and improved access to food in a country and region which is faced with two primary problems: water scarcity and the HIV/Aids pandemic.

Water scarcity and periodic drought in parts of the country and the region as a whole indicate that the production of conventional crops, using conventional agricultural practices will encounter greater problems in marginalised areas due to an unfavourable environment and climate. Given their general remoteness and poverty, people in these areas need to be able to produce their own food crops to ensure a measure of local food security which is not entirely dependent on external support. This would overcome many of the problems associated with local access to food. The loss of a household member's labour due to HIV/Aids related illness and death or even the loss of labour due to caring for afflicted household members affects the household in a number of ways. Often there is a loss of remittances and income due to death or incapacitation or there can be a loss of household labour supply, with the result that household activities have to be spread amongst the remaining able members (Hunter and Twine, 2005), who are themselves already engaged in other livelihood activities. The implication is that many households will not be able to carry out all of the existing or increased number of tasks, or at least not without making considerable sacrifices in other livelihoods. In such circumstances crops that are generally drought tolerant, require very little inputs, including labour, to produce sufficient yield, enabling them to grow and yield food in marginal areas become important for household food security, as does their associated indigenous knowledge.

TABLE 2 (over the page): Comparison of the nutritional content of five African Vegetables and one Domesticated Vegetable (Source – FAO, UP and NWU)

	Amaranth	Spider plant *Cleome gynandra*	Cowpea *Vigna inguiculata*	Jute/Jews mallow *Corchorus olitorius*	Pumpkin leaves *Cucurbita maxima*	Cabbage *Brassica oleracea var. capitata*
Iron (mg)	8.9	6.0	3.9	6.3	15.9	0.7
Protein (g)	4.6	4.8	4.1	5.2	4.2	1.7
Moisture (%)	84.0	86.6	87.6	81.0	87.3	91.4
Calories	42	34				26
Carbohydrates (g)	8.2	5.2	6.8	10.3	5.0	6.0
Fibre (g)	1.8					1.2
Ascorbic acids/ Vit C (mg)	64	13				54
Calcium (mg)	410	288	221.1	548.5	382.9	47
Phosphorus (mg)	103	111	80.1	136.4	119.2	40
ß-carotene/ Vit A (mg)	5716		2249.35	3662.99	1694.55	100
Thiamine	0.05		0.05	0.07	0.12	0.04
Riboflavin	0.42					0.1
Folic acid (mg/100g)	122		107	90		

Table 2 illustrates that in Africa some of these crops are often more nutritious in comparison to the favoured exotic vegetables, a fact which is supported by claims made by many South African rural households. The potential of these plants for nutrition and food security in light of current conditions in Southern Africa is something that policy makers, research and extension services in South Africa need to give further attention.

The significance of African Vegetables for food security is important because fieldwork in two rural villages in a drought prone area of the Limpopo Province indicates that only 17% of the 108 households surveyed did not have any African Vegetables growing in their home garden. Absence was generally a result of having recently moved to the area or not having enough money or material to erect a fence to protect food plants and crops, therefore they did not plant any crops. It was also noted that while most of the youth (under the age of 35) who were interviewed said they preferred exotic vegetables such as cabbage, they still consumed African Vegetables because these were more readily available if you did not have money to buy cabbage. All households noted that African Vegetables grew easily, without much labour and inputs, and that unlike exotic vegetables they relied exclusively on seasonal rainfall. 100% of those interviewed in the Limpopo Province study indicated that they consumed African Vegetables during the previous 12 months, usually at least once a day.

During discussions on the importance of these crops for food security, the general feeling was that the attributed importance differed vastly from household to household. Households with many members who do not provide a constant income tend to be more reliant on the African Vegetables. This is especially true where unemployment is high and in the older households where children no longer qualify for the child support grants. Food is expensive in winter and the dried African vegetables form the basis of a diverse and nutritious diet in most rural households, contributing up to about 80% of their total (excluding maize) food use in winter.

Households try to add some other source of protein (usually in the form of chicken head, necks and feet or tinned fish) to their diet. The regularity of this is dependant upon food resources and income. Most rural households attach importance to African Vegetables for their food security, but the label of 'poverty food' has negatively affected children and youth's perception of these foodstuffs (Vorster et al, 2005). Most youth reported preferring to eat exotic vegetables such as cabbage while acknowledging that they believed that African Vegetables were more nutritious. Taste seemed to be a big issue regarding preference. Addressing **the status issue** would help to increase the acceptability of African Vegetables.

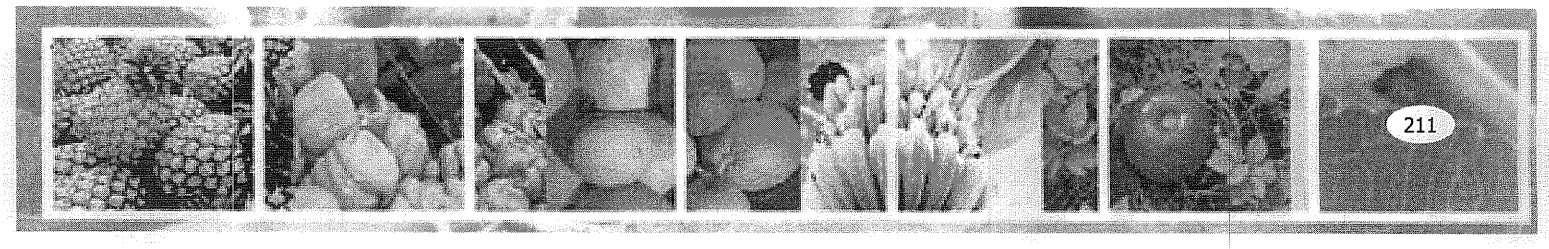
If the nearest town or food market is far from the rural areas and the taxi services are not easily available there seems to be a strong reliance on African Vegetables. Family members usually to go to town once a month to collect social grants and pensions, enabling them to buy staple supplies that keep well (oil, maize flour, sugar, etc.). Tinned foods are very expensive and fresh fruit and vegetables can only be kept for a short time (Vorster et al, 2005). This emphasises the need for cheap or free low input home grown foods when others are unavailable. African Vegetables are commonly seen as an additional source of food, due to their ability to grow in these generally marginal areas using low external inputs. Many households report storing dried leaves for consumption during the dry winter months when they are unable to grow any crops.

Knowledge about African Vegetables

Knowledge of the different groups of plants is available from both males and females. However, leafy vegetables tend to be the domain of the women. Knowledge of cashcrops, fruit and cereals seemed to be in the male domain, with children having only rudimentary knowledge of these plants. Formal education of the children was blamed for the lack of their knowledge, as small boys go to school and do not spend days in the veld looking after livestock and surviving on their knowledge of wild plants. The girls only tend to know the common and abundant traditional vegetables such as amaranth, cleome, cucurbits and actively cultivated vegetables (pumpkins, cowpeas, etc.) as they spend their days at school and have to do homework before dark, due to a lack of electricity. Due to the label given to indigenous knowledge over decades that it is 'backward knowledge', the youth tend not to be interested in the knowledge and plants. Current schooling curricula also seems to emphasise western norms rather than including those that are important to rural households. Where awareness of the value of these plants has been created, the youth interest also heightened (Vorster *et al*, 2003). Raising awareness of traditional vegetables would help to improve the status of these 'poverty foods' and 'backward knowledge', thus making it more acceptable to the younger generation. This is an important step that must not be ignored where this negative labelling has taken place.

The status of the leaves in the different gender and age groups varied for the different ethnic groups. In the Eastern Cape the Xhosa consider leafy vegetables to be 'women's food' that is mixed into the porridge made from maize flour. Men also eat it, but prefer to eat meat. The Zulu, Shangaan, Swasi, Pedi and Ndebele groups tended to eat the leafy vegetables as a relish for the porridge, and although not always the preferred food of men, it was eaten by all. No gender differences were noted with the cucurbits, and the wide variety of cucurbits (indigenous and exotic) available in most areas helped to increase the variety in taste. Different ethnic groupings tended to prepare their traditional vegetables in a particular fashion, and exposure to other preparation methods led them to increase the variety of their diet, both in terms of taste and nutrient content.

In different parts of South Africa there are differences amongst the ethnic groups in terms of cultural preference with regard to taste and plant choice. Generally men prefer the bitter taste of blackjack (*Bidens pilosa L.*), which was found in most areas, although these leaves are mixed with other leaves to give the dish more flavour. Amaranth was used in all the areas, with the Zulu and Xhosa mainly consuming it alone or as part of a mixture of leaves. *Cleome gynandra* L. (*spiderplant*) is generally preferred to amaranth in the areas where it grows (the hotter northern parts of South Africa and amongst the Pedi and Tsonga/Shangaan). In these areas amaranth is mixed with other leaves and seldom consumed on its own. Most rural households consider pumpkin an important vegetable when it comes to preference and use, with it being most popular in the northern regions of South Africa. A dish consisting of the young leaves and young pumpkins is very popular everywhere. The Venda add pumpkin flowers to the dish. The fact that the leaves, stems, pumpkin fruit and flowers can all be consumed gives the pumpkin its importance and priority over other plants. Generally, where a plant provides a number of sources of foodstuff the greater the priority



given to it by local people. In the drier northern parts of South Africa greater significance was given to plants whose leaves could be stored and dried – making them available as food during the dry winter months. *Chenopodium album* is very commonly used in the Eastern Cape but is not as important in the northern regions (Vorster *et al*, 2005). In each region individual crops are grown that are very specific to the local ethnic group, giving rise to different food dishes.

Concerns

Firstly, indigenous knowledge is eroding, because of its limited transfer between generations due to changing social systems, despite the significance of these plants to food security and livelihoods. Secondly, changes in population pressure on natural resources and a breakdown in the in-situ conservation strategies is starting to result in the deterioration of natural resources, including African Vegetables and consequently the indigenous knowledge associated with them. This is despite the significant contribution to food security made by these plants and their associated knowledge, and the fact that existing exotic vegetable cultivars cannot make such a contribution in marginal areas as they need high inputs and optimal conditions. Consequently, more attention needs to be paid to these plants and other indigenous food crops in order to increase their contribution to food security and the variety of ways in which this can be done from household consumption to commercialisation and value-adding. However, this process needs to be done with care and socio-cultural aspects need to be considered.

3. Role-players involved

The associations, institutions etc below have been working on African vegetables for a few years, and this includes documenting of information, nutritional analyses, food safety aspects, production aspects and commercialisation.

African Centre for Crop Improvement (ACCI)
Prof Mark Laing
Tel: 033 260 5524
laing@ukzn.ac.za

Agricultural Research Council
Mr Willem Jansen van Rensburg or Ms Ineke Vorster
Tel: 012 841 9611
wjvrensburg@arc.agric.za or ivorster@arc.agric.za

Research has been undertaken on the following: millet, cowpeas, bambara groundnuts and cassava (2004/5); amaranthus and amadumbe (2005/6); *Dovyalis caffra, Mimusops zeyheri, Engelophytum magalismontanum, Vangueria infausta, Parinari curatellifolia, Ximenia caffra and Garcinia livingstonei* (2006/7).

Agribusiness in Sustainable Natural African Plant Products (ASNAPP)
Mr Elton Jefthas
Tel: 021 808 2918
info@asnapp.org
www.asnapp.org

Commercial Products from the Wild (CP Wild)
Mr Cori Ham
Tel: 021 808 3303
www.cpwild.co.za

For a brief overview of fresh fruit trading, household fruit processing and commercialisation of indigenous fruit products, contact them.

Council for Scientific and Industrial Research – CSIR
Food, Biological and Chemical Technologies
Technology for Development
Ms Tshidi Moroka
Tel: 012 841 2649
mmoroka@csir.co.za
www.csir.co.za

Visit the website for more information about this unit. They developed the recipe book mentioned towards the end of this chapter, for example.

Fig Tree Indigenous Nursery
Tel: 031 267 2412

Grow Wild (Pty) Ltd
Tel: 011 465 8857
www.growwild.co.za

Grow Wild (Pty) Ltd is an indigenous/native nursery, specialising in plants that occur naturally on the highveld and are therefore drought and frost resistant. We stock a large variety of trees, shrubs, perennials, bulbs, succulents groundcovers and restios.

Human Sciences Research Council (HSRC)
Centre for Poverty, Employment and Growth
Tim Hart
(Senior Research Manager)
Tel: 012 302 2721 / 082 897 2003
thart@hsrc.ac.za
www.hsrc.ac.za

The HSRC conducts social science research on the use of Indigenous Knowledge as a resource in agricultural development activities and food security.

Khutso Foundation
Tel: 014 755 3724 /083 302 3988

KwaZulu-Natal Department of Agriculture and Environmental Affairs
Training Resources Development (TRD)

Relevant short courses are also offered i.e. sweet potato processing. A number of training Poster Modules are available in English and Zulu. The figure in brackets indicates how many posters are in the module:

- Sweet Potato Production (18)
- Traditional Foods Promotion (1)

For further information, contact Rikki Abbott (abbottr@dae.kzntl.gov.za) or Noreen Mhlongo (Noreen.Mhlongo@dae.kzntl.gov.za). You could also call 033 355 9358 or write to the TRD at Cedara College, P/ Bag X9059, Pietermaritzburg 3200.

Marula Natural Products
Tel: 011 403 0277
info@marula.org.za
www.marula.org.za

This is an eco-friendly, low-tech enterprise designed to uplift women in rural communities and provide a sustainable income for families in the tribal lands of the Limpopo valley. Marula products are fairly traded and directly benefit rural villages while encouraging the protection of the Marula trees in their natural environment.

Morogo Research Programme (MRP)
School of Environmental Sciences and Development
North-West University
(Potchefstroom Campus)
Dr Retha van der Walt
Tel: 018 299 2319
Retha.VanDerWalt@nwu.ac za

Research is conducted on health and nutrition aspects of some African Vegetables. Papers/articles include folic acid and alpha- linolenic acid (omega-3) in amaranth, spider flower and cowpea from three geographic areas in the Limpopo and North-West provinces; and minerals, micronutrients and antioxidant phytochemicals in morogo vegetables.

National Research Foundation
Renee le Roux
Tel: 012 481 4000 / 4001
www.nrf.ac.za

PELUM South Africa
Ms Monique Salomon
Tel: 033 260 6173/5094
salomon@ukzn.ac.za
www.pelumrd.org

The PELUM Association is a regional network of over 200 civil society organisations in east, central and southern Africa, which is working towards sustainable agriculture, food security, and sustainable community development in the region. Its focus on food sovereignty includes traditional and indigenous crops and breeds.

University of KwaZulu-Natal
Farmer Support Group
Dr Maxwell Mudhara
Tel: 033 260 6275
mudhara@ukzn.ac.za
www.fsg.org.za
www.cead.org.za
www.prolinnova.net

Sustainable Farming Systems & Food Security. This programme aims to promote organic and indigenous farming practices in rural communities, with a strong focus on Msinga. Interest groups are formed of smallholder farmers who want to experiment with new technologies to improve agriculture. Special attention is paid to the impact of HIV/Aids on households and food security.

The PROLINNOVA programme (PROmoting Local INNOVAtion). The focus is on recognising the dynamics of indigenous knowledge (IK), and learning how to strengthen the capacities of farmers to adjust to changing conditions in order to gain food security, sustain their livelihoods and safeguard the environment.

University of the Free State (UFS)
Centre for Plant Health Management
Prof WJ Swart (Chairperson)
SwartWJ.SCI@ufs.ac.za
Tel: 051 401 2383
www.cephma.org

Department of Plant Sciences
Tel: 051 401 2514
plantsciences@ufs.ac.za

Department of Genetics
Prof JJ Spies
Tel: 051 401 2261

The **Southern African New Crop Research Association (SANCRA)** is based at the University of the Free State.

University of South Africa (UNISA)
Prof J Olivier
Tel: 012 352 4284
olivij@unisa.ac.za

University of the Witswatersrand
School of Animal, Plant & Enviromental Sciences
Wayne Twine
rcrd@global.co.za

Conduct research on the use of indigenous plants and animals by rural households in order to examine the impact of this on the environment.

Find details of SANBI and the University of the Western Cape in the Medicinal Plants chapter.

4. National strategy

There is now a growing realisation by government and other role players about the importance of indigenous food crops as alternative food crops to enhance food security. Indigenous crops could enhance competitiveness of South African agriculture as niche products both on local and export markets. There is no doubt that some of the indigenous crops possess superior properties over conventional crops in terms of drought tolerance, nutritional status and food safety. There is a need for urgent revival and development of the sector.

The success of this policy would depend on its alignment with other government policies and legislation to avoid duplication and contradiction. Amongst others these include the Plant Improvement Act, 1976, Plant Breeders' Rights Act, 1976, National Environmental Management: Biodiversity Act, 2004, Conservation of Agricultural Resource Act, 1983 and the Policy on Indigenous Knowledge Systems, 2004.

Source: Draft Policy on Indigenous Food Crops.

Department of Science and Technology (DST)
National Indigenous Knowledge Systems Office (NIKSO)
Dr Otisele Ntsoane (Deputy Director)
Tel: 012 843 6300

The National Indigenous Knowledge Systems Office (NIKSO) in the Department of Science and Technology addresses emerging policy developmental challenges around the protection of indigenous knowledge systems in the country. Interested in the collaboration of different knowledge systems, it one of the main drivers in the area of food security and agriculture.

A Ministerial Advisory Committee on IKS, introduced in April 2008, supports NIKSO in its responsibility for advising Science and Technology Minister on strategic issues.

Department of Agriculture
The Directorate: Plant Production Systems
Mr Thabo Ramashala
Tel: 012 319 6079
DPP@nda.agric.za

Directorate: Genetic Resources Management
Dr Julian Jaftha
Mr A Lezar
Tel: 012 319 6214/6024
DGR@nda.agric.za

Other government departments are involved in areas of IK e.g. the **Department of Trade and Industry** (Intellectual Property, Amendments of Patent and Copyright Legislation); the **Department of Provincial and Local Government** (Traditional Leadership and Governance Framework Bill) etc.

5. Publications and websites

The following Info Paks can be obtained from the Resource Centre at the Department of Agriculture, or be viewed (and downloaded) from www.nda.agric.za – take the "Tips and Tricks of Farming" menu option:

- Bambara groundnut.
- Field crops: Chickpeas
- Field crops: cowpeas
- Amarath, also known as morogo.

The contact number at the Resource Centre is 012 319 7141.

Guide to Sweet Potato Production in South Africa. A guide to weevil control is available from ARC-Roodeplaat (012 841 9611) and also includes all other aspects of sweet potato production e.g. diseases, cultivation, cultivar choice.

Included amongst the hundreds of leaflets available from the ARC-VOPI are several categories of relevance to this chapter: Indigenous leaf crops (e.g. marog), Indigenous root crops (e.g. The cultivation of Cassava, Wild potato, Amadumbi) and Indigenous seed crops (e.g. bambara groundnut, pigeon peas, cowpeas). Contact the Public Relations Officer at 012 841 9611 or fax 012 808 0844.

Find *Best Practices on Indigenous Knowledge*, joint publication of the Management of Social Transformation Programme (MOST) of UNSECO, and Centre for International Research and Advisory Networks (CIRAN) on www.unesco.org

IK Notes reports periodically on Indigenous Knowledge (IK) initiatives in Sub-Saharan Africa and occasionally on such initiatives outside the Region. It is published by the Africa Region's Knowledge and Learning Center as part of an evolving IK partnership between the World Bank, communities, NGOs, development institutions and multilateral organisations. A webpage on IK is available at www.worldbank.org/afr/ik/default.htm.

Building Opportunities for Small Holder Farmers to Commoditize Indigenous Fruit Trees and Products in Southern Africa: Processing, Rural Pilot Enterprises and Marketing. Festus K. Akinnifesi, Cori Ham, Danie Jordaan, Myles Mander, Dagmar Mithofer, Tunu Ramadhani, F. Kwesiga, John Saka, Sola Phosiso. Tree products, especially indigenous fruits products provide avenues for millions of small-holder farmers to improve their livelihoods in developing countries. This paper synthesizes our research and development experiences in understanding market constraints and opportunities, potential impacts of fresh fruits, and feasibilities of rural enterprises to set up pilot sites in four countries (Malawi, Zambia, Zimbabwe and Tanzania). The results suggest that the most promising opportunity for rural processors of indigenous fruits, is to focus on the local markets of fruit concentrates as an export substitute. Establishment of partnerships between producer communities and private entrepreneurs is essential. Holistic farm plans are needed to promote cultivation, to ensure product quality and to maximise competitiveness at the farm gate and throughout the supply chain.

www.kara.co.za – website of the KARA Heritage Institute. The Joint Managing Directors are Ditshego Mmakherofo Motshekga and Mulalo Nemavhandu. Contact 012 320 7760 or email admin@kara.co.za

Relevant publications

- *Policy on Agriculture in Sustainable Development, A Discussion Document 8th Draft*. Department of Agriculture
- *National Policy on Plant Production in South Africa*. Department of Agriculture.
- *FARA-SADC Regional Dialogue* The "Winning papers and Abstracts" include articles on IK by S Mwakalila (Tanzania), ME Mrema (Tanzania), and MT Masarirambi and M Gundidza (Swaziland)

- *Lost Crops of Africa. Volume 1*: Grains. National Research Council. 1996. National Academy Press, Washington,D.C.
- *Food from the veld: edible wild plants of southern Africa*. Fox, F.W. and Norwood Young, M.E. 1982. Delta Books, Johannesburg, South Africa.
- *Adult Mortality and Household Dietary Use of the Local Environment: Qualitative Evidence from the Agincourt Field Site in Rural South Africa*. Hunter, L.M. & Twine, W. 2005. Institute of Behavioral Science Working Paper EB2005-0001. Boulder: Research Program on Environment and Behavior, University of Colarado at Boulder.
- *The effect* of (re-) creating awareness of traditional leafy vegetables on communities. Vorster, H.J.; Jansen van Rensburg, W.S.; Mashele, X.B. & Ndlela, E. 2003. Proceedings of the Indigenous Plant Use Forum Conference, 5-8 July 2003, Clanwilliam, South Africa.
- *Germplasm Management of African Leafy Vegetables for the Nutritional and Food Security Needs of Vulnerable Groups in South Africa*. Vorster, H.J., Jansen van Rensburg, W.S., Van Zijl, J.J.B., Van den Heever, E. & Esterhuize, J. 2002. Progress Report from ARC-Vegetable and Ornamental Plant Institute, South Africa for the International Plant Genetic Resources Institute, June 2002.
- *The Importance of Traditional Leafy Vegetables in South Africa*. Vorster, H.J.; Jansen van Rensburg, W.S.; Venter, S.L. & Van Zijl, J.J.B. 2005. Paper presented at a Regional Workshop on African Leafy Vegetables for Improved Nutrition, 5-9 December, Nairobi, Kenya.
- *The Southern African Trade Directory of Indigenous Natural Products*. Commercial Products from the Wild Group. Free copies are available – contact Tel: 021 808 3303
- Indigenous Knowledge Systems in African Agriculture. Hart, TGB & Vorster, H.J. 2007. Department of Science andTechnology. Obtainable from the NIKSO of DST or downloadable from their website
- Indigenous Knowledge on the South African Landscape: Potentials for Agricultural Development. Hart, T. & Vorster, H.J. 2006. Human Sciences Research Council. Obtainable from HSRC Press and downloadable at www.hsrc.ac.za

6. Local business environment

The indigenous food crop sector is faced with a number of challenges which hinder productivity and profitability:

- **Shortage of seed and other propagatng material**. There is no formal seed supply system for many indigenous crops
- **Increased decline in consumption and production.**
- **Lack of value-adding technologies**. As a result indigenous crops are largely consumed unprocessed. The popular value addition is drying or processing into flour through pounding. Lack of processing technologies makes it difficult for the sector to cater for changing needs of consumers.
- **Marketing problems**. Both local and export markets are flooded by exotic crops making it difficult for the introduction of indigenous crops. As a result, indigenous crops remain largely crops of the small producers, consumed largely in areas where they are produced.
- **Threatened species**. Since a lot of the vegetables and fruit occur under natural vegetation, they face over-exploitation. Edible seeds and fruits of these crops are gathered from the wild and with current growing human populations, and increased numbers of range animals (which eat the foliage as well as seed) populations of these plants are at risk of over-exploitation. This may result in elimination of the species from the areas and this is mostly aggravated by the fact that no or little effort is done to cultivate these species.
- **Food security concerns**. South Africa relies on a few staple crops for the survival of its people. These staple crops are maize, wheat, rice, potatoes, and beans. The heavy dependence of majority of South Africans on a few staple crops, make many poor people vulnerable to opportunistic and unjustified high increases in food prices especially staple food like maize meal. Poor households spend up to 50% of their income on food. This has caused a lot of hardships for poor households. When it comes to basic foods consumers have no choice but to absorb the price increase or starve.

7. International business environment

See separate chapter on Intellectual Property

Alliance for a Green Revolution in Africa (Agra) – www.agra-alliance.org. The world's poorest continent needs skilled crop breeders to develop high-yield, hardy and nutritious varieties of crops for African conditions. More than 200-million Africans are malnourished and hungry but most crops important to Africa – cassava, sorghum, millet, plantain or cowpea – are not important to Western researchers. As a result there is a serious shortage of breeders of those crops. There are, for example, fewer than a dozen millet breeders in Africa, yet millions of sub-Saharan Africans depend on millet as an important part of their diet. Agra is giving $4,9-million to the University of Ghana for students from West and Central Africa, and $8,1-million to KwaZulu-Natal University for students from the south and east. Source: Mail & Guardian 19 September 2007.

The **Global Facilitation Unit for Underutised Species (GFU)** was set up in 2002 to encourage wider deployment of underutilised plant species globally. Visit www.underutilized-species.org

United Nations Educational Scientific and Cultural Organisation (UNESCO) – www.unesco.org. Find references to safeguarding Intangible Cultural Heritage (ICH).

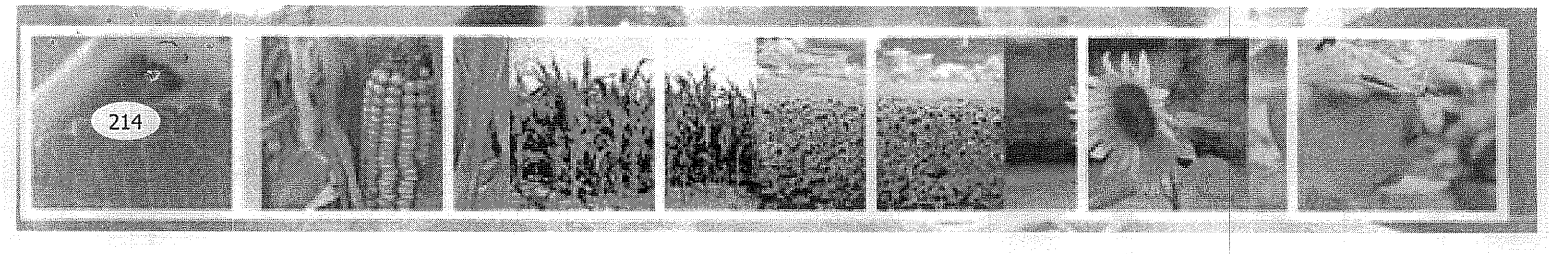
8. New farmer information

Cultivation

African vegetables are usually planted or occur as volunteer crops after the first rains. Cultivation is not very extensive in South Africa, with the main reason for cultivation given as household food security and replenishment of the seedbank. Pumpkins (*Cucurbita* maxima) are planted in most parts of South Africa. It is an easy plant to grow and seeds are readily accessible. Cowpeas (*Vigna ungucuilata*) are sometimes planted, with people in the coastal areas planting amadumbes or cocoyams/taro (*Colocasia esculenta*) as a source of both tubers (starch) and leaves. Cassava (*Manihot esculenta Crantz.*) is not widely known, but the Shangaan/Tsonga people brought it with them from Mozambique generations ago. Cassava's dual purpose, as a source of both tubers (starch) and leaves, makes it a popular crop. Individual ladies might broadcast seeds of cleome, but this is not common practice. Due to the short period (approximately three months) that wild leafy vegetables can be harvested (leaves become tough once the plant has flowered), the establishment of cultivated crops or improved harvesting techniques might well improve the leaf yields. The high rate of vitamin A deficiency in South Africa can be partly addressed by promoting the cultivation of these hardy and drought tolerant crops, as both the pumpkins and amaranth are naturally high in vitamin A (Vorster *et al*, 2005).

Drying and storage of African vegetables

Drying of African vegetables, especially leafy vegetables, is very common. In some parts of the Eastern Cape the knowledge of how to dry some of the different vegetables seems to have been lost. When offered information on how to dry the leafy vegetables, this was readily accepted by rural women. A lack of knowledge about drying results in food shortages in the winter and spring months. Most of the leaves are dried in the sun, with the rural people in the northern regions both blanching and not blanching the leaves prior to drying. The Xhosa tend to dry without blanching. Blanching softens the leaf, lengthening the shelf life. Producers and consumers mentioned that the shelf life of all the vegetables, except cowpeas, was something they would like improved. Drying of cucurbit fruit was not common in the northern regions, while the Xhosa practise limited drying of the fruit (Vorster et al, 2005). Virtually none of the rural households seem to dry exotic vegetables. Those that are dried by a handful of households are spinach and cabbage.



Seed systems and conservation

African Vegetable seed systems are generally not functioning in some areas of South Africa , and this has led to the loss of some plants in communities, posing a serious threat to local biodiversity. Some of the more common plants such as amaranth and cleome are becoming scarcer due to the heavy thunderstorms that lead to soil erosion and the loss of seeds (Vorster et al, 2002). Similarly, population pressure and the reliance on African Vegetables that are harvested in the wild are also gradually depleting this source of food (Hunter and Twine 2005). The ramifications of this resource deterioration will be evident in the ecological, health and social dimensions. Re-establishing seed storage and exchange systems in communities are not only important for African Vegetables, but would also be beneficial for other non-hybrid crops. Changing cultural patterns in some situations has resulted in the discontinuation of the role of the traditional custodian of the seeds in communities, in many rural areas. Storing and preserving seeds is an important part of preserving biodiversity and should be addressed by making the information available and improving the importance of the responsible person within the community. In some villages individual producers store their own seeds for some of the African Vegetables, but these tend to be the plants that require more attention and are often not plants indigenous to Africa.

Recipes

Each ethnic group in South Africa tends to have its own way of preparing food or relish consisting of African vegetables. Dishes are dependent on the availability of various plants at each locality. While preparation is generally similar the flavour of the dishes may differ as a result of the combination of available African Vegetables and other foodstuffs, including spices.

A recipe book on South African Indigenous Foods - the result of a poverty alleviation project - has been produced and is being sold commercially as a revenue-generating project for communities. The recipes have been collected as part of a project aimed at commercialising and promoting South African indigenous foods and has been funded by the Department of Science and Technology and implemented by CSIR Food, Biological and Chemical Technologies. The book can be purchased via Exclusive Books. Visit http://www.exclusivebooks.co.za/ There are also other books on the preparation of Indigenous foods like *Cooking from Cape to Cairo: A Taste of Africa* by Dorah Sithole.

Source: www.hsrc.ac.za/about/HSRCReview/Vol3No2/smallFarmers.html

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Field crops and horticulture

Indigenous medicinal plants

1. Overview

The article "Economics of the Traditional Medicine Trade" in South Africa by Futureworks! provides statistics and trade figures for this sector. Find details under the "Publications & Websites" heading.

The use and trade of medicinal plants in South Africa has become an area of significant interest for a range of groups, from environmentalists, to economists, social scientists, rural development specialists and law makers. The main reason for this is that African medicinal plants play a major role in the lives of most South Africans: about 80% of our population uses medicinal plants, and about 25% of all prescription drugs contain some ingredient sourced from plants. The livelihoods of many medicinal plant harvesters and traders depend on this trade.

The trade in traditional medicines in South Africa is estimated to be worth R2.9 billion per year, representing 5.6% of the National Health budget. With 27 million consumers, the trade is vibrant and widespread. There are at least 133 000 people employed in the trade, with a large percentage of rural women. The plant trade is a key rural industry and business incubator.

The supply of plant material and medicines is not sustainable at present.

All plants are harvested from the wild, with popular species becoming locally extinct and being traded at very high prices. Much of the current research and development effort focuses on novel drugs research, with little effort being directed at improving the current harvesting, production, processing, storage and treatment technology. The future of the traditional medicines trade and its benefits are uncertain.

There is a dire and urgent need to develop new technologies for medicinal plant harvesting, farming, processing, stabilisation, packaging, dispensing and treatment; as well as a need for assistance and support to be provided to current role players in the industry to address the challenges and opportunities that they face.

Source: Nicci Diederichs. Contact nicci@futureworks.co.za

2. Role-players

There are a number of different actors that have a part to play in addressing these issues through development of the medicinal plants industry in South Africa:

- The current roleplayers who have the knowledge of plants and their uses, credibility and market buy-in;
- Private enterprise with the necessary resources, skills and capacity;
- Research and development agencies with innovative ability; and
- Government with the ability to set up a supportive, facilitatory and protective environment for growth.

Source: Nicci Diederichs. Contact nicci@futureworks.co.za