

An Exploration of the Consumption of Indigenous Vegetables in Informal Settlements in the West Coast District Municipality, Western Cape Province, South Africa

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Abstract

Problems affecting the access and consumption of indigenous vegetables in developing countries are related to a decline in cultivation and consumption. The aim of this article was to investigate the consumption of indigenous leafy vegetables in rural and informal settlements of the West Coast District Municipality, Western Cape, South Africa. The majority of the respondents were females (69.8%) aged 35 years or less (64.3%) and were mostly black individuals (90.7%). The majority of respondents (76.1%) had no formal education, and only 20% had a matric qualification. The most accessed crops of indigenous leafy vegetables were sweet potato (82.4%), melons (80.5%), pumpkin (77.6%) and cowpeas (46.3%). The vast majority of respondents (92.6%) consumed indigenous leafy vegetables. The consumption of indigenous leafy vegetables was associated with the ethnicity and the age of the respondents. Indigenous leafy vegetables constitute an important part of the diet of the people of this community and although they are available in local retail outlets, many people are not cultivating them in subsistence farming. It is recommended that the cultivation and consumption of indigenous leafy vegetables should be promoted in this area.

Keywords: Consumption, Indigenous Leafy Vegetables, Informal Settlements

Introduction

Most of the South African poor communities occupy mainly informal and rural settlements. Both settlements are characterized by poverty and high levels of food insecurities. Statistics South Africa defines informal settlements as unplanned settlements on land which has not been surveyed or proclaimed as residential. These settlements are characterized by informal

dwelling known as shacks (Western Cape Informal Settlements Status, 2013) and experiences high level of food insecurity of the communities of these households that stays in these settlements due to high level of unemployment and poverty. Higher number of this rural households have been dependent on indigenous vegetables for sustenance. These indigenous vegetables may be defined as plants that are either native to an area or were introduced to the area long enough to have adapted to the local conditions (Rensburg et al., 2007). In most rural communities in Africa and South Africa in particular, indigenous vegetables are grown in home gardens and on subsistence farms and are still collected from the wild (Faber et al., 2010). The indigenous vegetables either grow as weeds among other vegetable plants or are cultivated in subsistence farming alongside cereal crops such as the maize plant (Chelang et al., 2013). Although neglected and underutilized in South Africa, indigenous vegetables offer unique opportunities to diversify farming systems, ensure food security and alleviate poverty, while increasing income and improving human health.

Indigenous vegetables can easily adapt to harsh environmental conditions hence preferred for consumption by many rural villagers. Moreover, the indigenous leafy vegetables form part of the daily staple diet of South Africans and are rich in nutrients, e.g., vitamin A and iron. Most of these vegetables are currently harvested in wild, while few are cultivated. The problem affecting the access and consumption of indigenous vegetables in developing countries are related to a decline in cultivation and consumption (Sasson, 2012). The inadequate cultivation of indigenous vegetables has resulted in an insufficient supply of indigenous vegetables, especially in seasons when vegetables are scarce (Maseko et al., 2017).

The indigenous vegetables are associated with poverty which aggravate the decline in the consumption of these vegetables in rural communities of developing countries in favour of exotic vegetables (Mayekiso & Mditshwa, 2017). In addition, younger generations of rural communities have negative perceptions of indigenous vegetables, which negatively affect the preference and consumption of these vegetables by the youth (Gido et al., 2017a). The reduced knowledge and consumption of indigenous vegetables has been reported to be caused by urbanization (Gartaula et al., 2020).

Currently, there is limited information on the access and consumption of indigenous vegetables by households in the rural and informal settlements in South Africa. Therefore, this study aimed to investigate the access and consumption of indigenous vegetables by households in the rural and informal settlements in the West Coast District Municipality (WCDCM), Western Cape province. Currently there is limited information on the consumption of indigenous vegetables in households of informal settlements in the West Coast District Municipality, Western Cape Province, South Africa. This study aims to explore the consumption of indigenous vegetable in informal/rural communities. The purpose of the study is to investigate the consumption of indigenous vegetables in households of informal settlements in the West Coast District Municipality, Western Cape Province.

The study contributes to the body of literature on providing new insights into the access and the consumption pattern of indigenous vegetables and the factors influencing its use and possible benefits of its consumption that may be used by different stakeholders to improve the access, cultivation and consumption of these indigenous vegetables.

The paper is organised as follows. The following section provides a literature review on the availability and access of the consumption of indigenous vegetables and its use. Then, the research method is described, focusing on data collection and the variable measurement, whereas findings section presents the results through descriptive statistics, and discussing

some quantitative questionnaire responses. The final section includes the conclusions of the study.

Literature Review

Overview of the Availability and Access of Indigenous Vegetables for Consumption

Availability and accessibility are major factors contributing to the reduced consumption of indigenous vegetables. People in the rural areas have free access to indigenous vegetables as they are collected from the wild, in farms and in plantations (Faber et al., 2010). However, people can be reluctant to walk long distances to gather these vegetables from the wild, thus contributing to a reduced use of indigenous vegetables (Dweba & Mearns, 2011). Most indigenous vegetables are seasonally available which leads to a reduced frequency of consumption as these vegetables are not available, particularly in drought periods (van der Hoeven et al., 2013).

The consumption of indigenous vegetables can be affected by urbanization, preference, access and availability. Indigenous vegetables are less available in urban and peri-urban areas; thus, urban residents have to purchase vegetables from informal markets, which also sell at expensive prices during the dry season (Oladele et al., 2011). Urbanization introduces westernized values which associate the consumption of indigenous vegetables with poverty and past way of living, these negative perceptions consequently lead to reduced usage of these vegetables in favour of exotic vegetables which is considered a modern way of living (Dweba & Mearns, 2011; Hart, 2011). Thus, urbanisation contribute to a decline in knowledge of the usefulness of indigenous vegetables, hence the reduction in the consumption of these foods.

This dietary change, especially in poor informal settlements communities, put people at risk of malnutrition and other nutrition-related non-communicable diseases. The United Nations Children's Fund, contend that the underlying causes of malnutrition and death in children are poor household food security, inadequate maternal and childcare, insufficient health services and an unhealthy environment or lack of education and information (Lemke, 2005). Indigenous vegetables can play an important part in alleviating hunger and malnutrition. As they are an important source of micronutrients, including vitamins A and C, iron and other nutrients, and are sometimes better nutritional sources than modern vegetables (Uusiku et al., 2010).

Indigenous vegetables have been perceived by modern rural communities as inferior and often regarded as a poor people's food in South Africa (Faber et al., 2010), this unfortunate label has stigmatized these vegetables, especially among young people (Ineke et al., 2007). Although it has led to a decline in the use of these wild-food resources in many communities, as well as the conveyance of knowledge associated with the vegetables (Lemke, 2005), the consumption of it in South Africa persists, implying that some traditional knowledge and production processes still exist (Mabhaudhi et al., 2019). Knowledge of the use of indigenous vegetables needs urgent scientific investigation and documentation before it is irreversibly lost to future generations (Uusiku et al., 2010). Awareness can lead to an increase in interest and demand for indigenous vegetables. Raising awareness of the health benefits associated with consumption of indigenous vegetables through education and social media increases acceptability and interest of indigenous vegetables among household communities in the rural and informal settlements. This in turn promotes the inclusion of indigenous vegetables in diet (Bvenura & Sivakumar, 2017). Other factors that have contributed to this decline include the westernization of the diet, the younger generation's lack of enthusiasm for

identifying and preferring convenience foods, harvesting, and methods of preparation and preservation (Bvenura & Afolayan, 2015).

The cultivation of indigenous vegetables is a common practice; however, not all species are being cultivated. These vegetables are mostly grown as intercrops with other vegetables or staples in home gardens and there has been hardly any production on a large scale (Dweba & Mearns, 2011). Hart (2011) reported that the cultivation of indigenous vegetables in home gardens is a common practice in South Africa. A survey conducted in Limpopo Province demonstrated that most indigenous vegetables were naturally occurring in the household plots; however, these vegetables were nurtured by allowing them to grow after germination (Hart, 2011). Selective weeding is practiced in these plots, that is when indigenous species, mainly the ones treated as food, are treated as crops and allowed to grow without disturbance (Talení et al., 2012). There is often no precise spacing of seeds during cultivation, and wood ash is used to control pests (Chelang et al., 2013). Indigenous species generally require less inputs for cultivation than the exotic species (Muhanji et al., 2011). As naturally, indigenous vegetables rely exclusively on rainfall; however a few species such as okra may require watering in the initial two months (Shrestha, 2013). Some indigenous species such as amaranth are tolerant of adverse climatic conditions however, the prolonged seasons of drought may lead to reduced yields. Moreover, the leguminous plants such as cowpeas are said to be beneficial for adding nutrients to the soil through nitrogen fixation process (Talení et al., 2012). In the Limpopo province, South Africa, research conducted by Hart (2011) in Molati village showed that cultivated indigenous vegetables were essential foodstuff in the people's diet. Consumption of indigenous vegetables was more frequent particularly during midday and evening meals as compared to meat (Hart, 2011). Cultivation of indigenous vegetables provides a reliable access to these vegetables, particularly during the dry season as poor households are able to produce for home consumption as well as enough vegetables to preserve and cover the dry season. This in turn increases frequency of consumption during this season (Hart, 2011). A lack of seed, poor soil fertility, and poor weather conditions, were reported as contributing factors to reduced availability, consequently leading to reduced consumption of indigenous vegetables in a study conducted in KwaZulu-Natal Province, South Africa (Vorster, 2007). It is worth noting that consumption of indigenous vegetables is associated with higher dietary diversity and better micronutrients (Boedecker et al 2014) and have been found to address the need of household food insecurity, as they are perceived to be nutritious and available at a lower cost. Furthermore, they are relatively easier to prepare and can be available during periods of drought and low rainfall (Muhanji et al., 2011). Hence, indigenous vegetables contribute to the annual food supplies of many poor households in rural or informal communities.

Indigenous vegetables have the potential to reduce poverty and contributes to high economic value in rural communities where sales generate a high income (Pichop et al., 2016). Many of these vegetables can be grown at home and sold in informal markets, however, the supplies reaching cities are generally thought to be insufficient to meet natural demand (Mwema et al., 2012). This is because they are undervalued and ignored by government decision-makers, as a natural resource economic values (Kasimba, 2018). Increased marketing of these vegetables can be one method of promoting indigenous vegetables consumption. This has the potential to help empower the growers, producers, and processors of indigenous vegetables, particularly women who engage in their collection and sales (Mungofa, 2016). Higher diversity on indigenous vegetables in retail outlets increases consumption as indigenous vegetables will be more accessible and can boost income generation in poor rural

settlements and may lead to an increased consumption of these vegetables in urban settlements (Mojeremane et al., 2011). Retailing of these vegetables has economic benefits (Barirega et al., 2012) and can lead to poverty alleviation through income generation (Oladele et al., 2011).

Despite the commercial potential of indigenous vegetables, the quantity of indigenous vegetable sold in formal markets is much lower than in informal markets (Mojeremane et al., 2011). However, some indigenous crops have been successfully commercialized in many countries such as South African indigenous tea, rooibos, represents a success story in the commercialization and marketing of indigenous products. The availability of indigenous vegetables is limited compared to other food choices. These vegetables could diversify food choices within the food system and address household food insecurity and enhance livelihoods, including income generation from indigenous vegetables sales and it is therefore very important to produce them for both consumption and selling.

Materials and Methods

Study Area

This study was conducted in Western Coast District Municipality (WCDM) in South Africa. The West Coast District Municipality is a historically fishing and agricultural region located in the Western Cape Province of South Africa and comprises five local municipalities, namely Saldanha Bay, Bergrivier, Swartland, Matzikama and Cederberg (West Coast District Municipality, 2014). According to the WCDM (2016), the population of the West Coast is estimated to be 427 742 by 2017, with a strong concentration of the young age groups of between 25 to 37 years. Statistics South Africa defines informal settlements as unplanned settlements on land which has not been surveyed or proclaimed as residential. These settlements are characterized by informal dwellings known as shacks (Western Cape Informal Settlements Status, 2013). The 2009 National Housing Codes Informal Settlement Upgrading Program identifies informal settlements as characterized by lands which are unsuitable for settlement due to topological features such as unstable soils, wetlands and flood risk, associated with high population densities and also backlog in service delivery (Western Cape Informal Settlements Status, 2013). There has been an increase in the number of households. As per the 2016 community survey, the number of households is estimated to be 129 862 as compared to Census 2011, which showed 106 781 households. Poverty is highly associated with these informal settlements (Statistics South Africa, 2019). Furthermore, an approximately 51.4% of the households in the WCDM fall within the poor to low-income group, which ranges between 0 (no income) to R4 166 per month (WCDM Social Economic Profile, 2016). Most of the residents were cash poor (Govender et al., 2011).

Research Design and Data Collection

A cross-sectional descriptive survey using a questionnaire was conducted on individuals who were principally responsible for household food preparation. This study design was most appropriate as it allowed collection and analysis of both qualitative and quantitative data. Respondents were sampled from all the five local municipalities in the West Coast District Municipality. Each local municipality was divided into areas of informal and rural settlements. Respondents were randomly samples from informal settlement areas and rural settlements areas of the five local municipalities in the West Coast District Municipality. Respondents (individual who contribute to household income) were randomly sampled from a list of households from randomly selected informal and rural settlement area in five different local

municipality. A total of 205 respondents, representing 205 households in the informal and rural settlement areas, from all the five local municipalities in the West Coast District Municipality, were interviewed.

Prior to data collection, permission to conduct the study was requested from the WCDM by the principal researcher. Data collection was done by means of an interview and survey questionnaire. An interpreter for Xhosa language was available when required for translation from English. Data collection and each session lasted about 30 minutes. The questionnaire was administered through face-to-face interviews, the researcher recorded interview data, captured and also took notes of additional responses probed by open-ended questions. SPSS version 19 was used to perform for descriptive statistics and Chi Square analysis. The questionnaire was subjected to a pilot study using 20 respondents selected randomly from different households to ensure validity and reliability and a Cronbach's alpha coefficient, and a score of 0.79 was obtained.

Results and Discussions

Socio-demographic details of respondents

The majority of the respondents were black (90.7%), females (69.8%) and 35 years or less (64.3%). Mostly indigenous African communities (Jansen van Rensburg et al., 2014) lived in this area and fewer males can be due to rural to urban migration by young in search of jobs and better opportunities in life (Mlambo, 2018). The majority of the respondents were single (54.6%) or were married or living with a partner (41.4%). These results can be attributed to their sex, age, personality and commitment since these factors significantly predict the reasons that drive individuals to remain single (Apostolou, 2017).

The majority of respondents (61%) had an average monthly income of below R1 000 and this could be attributed to low-paid unskilled jobs in rural and informal settlements. In terms of highest educational qualification, the majority of the respondents (76.1%) indicated that they have no formal qualification, while a few of them (20%) had obtained a matric certification (high school certificate) and the rest (4.9%) had a higher education diploma, certificate or a degree (Table 1). The reason for this low educational level can be attributed to racial-segregation laws from the apartheid government that limited access to educational institutions for black South Africans by relocating them into overcrowded reserves away from white-dominated urban areas (Spaull, 2015).

Table 1: Biographic information of respondents (N=205)

Variable	Frequency (%)	
Gender	Male	62(30.2)
	Female	143(69.8)
Age group	18–25 years	29(14.1)
	25–35 years	103(50.2)
	36–45 years	49(23.9)
	46–75 years	24(11.7)
Ethnicity	Black	186(90.7)
	Coloured	19(9.3)
Marital status	Married by law	32(15.6)
	Traditional marriage	38(18.5)
	Living with partner	15(7.3)
	Separated	3(1.5)
	Widowed	5(2.4)
	Single	112(54.6)
Average monthly income	Below R1 000	125(61)
	R1 000–R2 999	41(20.5)
	Above R3 000	37(18.5)
Highest education level	No formal education qualification	156(76.1)
	Matric certificate	41(20)
	Post-matric qualification	8(3.9)

Table 2: Accessibility of indigenous leafy vegetable crops to respondents (N=205)

Crop	Frequency (%)
Amaranth	62(30.2)
Chinese cabbage	55(26.8)
Cow peas	95(46.3)
Pumpkin	159(77.6)
Melons	165(80.5)
Blackjack	25(12.2)
Spider plant	15(7.3)
Jew's mallow	10(4.9)
Nightshade	39(19)
Sweet potato	169(82.4)
Common lambsquarters	63(30.7)
Common sow thistle	68(33.2)
Ethiopian mustard	52(25.4)
Cassava	16(7.8)
Cocoyam	20(9.8)
Purslane	23(11.2)
Pigeon peas	65(31.7)
Other	0(0)

Access to and reason for the consumption of indigenous leafy vegetables

Respondents had access to all 17 indigenous leafy vegetables listed; the most-accessed crops were sweet potato (82.4%), melon (80.5%), pumpkin (77.6%) and cowpeas (46.3%). Other crops of leafy vegetables that were accessed by 25% of the respondents were common sow thistle (33.2%), pigeon peas (31.7%), common lambsquarters (30.7%), amaranth (30.2%), Chinese cabbage (26.8%) and Ethiopian mustard (25.4%). The remaining crops were accessed by less than 25% of the respondents (Table 2). The vast majority of the respondents (92.6%)

indicated that they consume indigenous leafy vegetables, and the reasons put forward by most of the respondents were that indigenous leafy vegetables possess many health benefits (49.3%) and they like the taste of indigenous leafy vegetables (37.1%). A few respondents indicated that they consume indigenous leafy vegetables because they are cheap (5.9%) or readily available in the wild (8.3%). According to 54% of the respondents, the availability of indigenous leafy vegetables in their area has increased over the years. Most of the respondents indicated that they buy indigenous leafy vegetables from informal markets (80.5%) and retail shops (56.6%) (Table 3). The indigenous leafy vegetables that were accessible to 50% or more of the respondents were sweet potatoes, melons and pumpkins. This could be due to climatic conditions that favour the growth of these indigenous leafy vegetables (Rukundo et al., 2014). These crops are also considered drought resistant owing to their ability to adapt to changes in environmental conditions (Rukundo et al., 2014).

A few of the respondents indicated that they get indigenous leafy vegetables from a home garden/yard (9.8%), a community garden (1.5%) or in fields/in the wild (27.3%) (Table 3). This could be attributed to a lack of interest in cultivation (Sasson, 2012). Indigenous leafy vegetables are available to a certain extent throughout the year to a significant number of respondents (Table 3). More than 25% but less than 50% of the respondents were able to access cow peas, common sow thistle, pigeon peas, common lambsquarters, amaranth, Chinese cabbage and Ethiopian mustard. Access to these indigenous leafy vegetables could be affected by their seasonal availability; fresh indigenous leafy vegetables are more available in the growing season than during the non-growing winter season (Shumsky et al., 2014).

The indigenous leafy vegetables that were least consumed were Jew's mallow, spiderplant, cassava, purslane and nightshade. These were indicated by 20% or less of the respondents. This could be due to undesirable attributes such as the slimy texture of the Jew's mallow, which could be offensive to some, and the bitter taste of the spiderplant and nightshade, which could also be undesirable (Rensburg, 2014). Only a minority of the respondents did not consume indigenous leafy vegetables. However, the vast majority of the respondents indicated that they consumed indigenous leafy vegetables because indigenous leafy vegetables are healthy. These findings are in line with previous studies in which respondents strongly believe that indigenous leafy vegetables have a substantial capacity to maintain good health (Guyu & Maluneh, 2018). Indigenous leafy vegetables have macronutrients and micronutrients together with antioxidant, anti-bacterial and immune boosting properties and thus, indigenous leafy vegetables not only serve as food sources but also as medicinal sources (Maseko et al., 2017).

The reason why the majority of respondents indicated that the availability of indigenous vegetables has increased in their area could be the adaptation of these vegetables to arid weather conditions (Botai et al., 2017). Harsh weather conditions favour the growth of indigenous leafy vegetables, unlike their exotic counterparts (Mayekiso & Mditshwa, 2017). The adaptation of indigenous leafy vegetables to arid conditions enables them to be available throughout the year, and some of them such as amaranths do not require a specific season for cultivation (Pitso & Lebeso, 2014). However, a significant minority of respondents indicated that the availability of indigenous leafy vegetables has decreased in their area, which could be attributed to a lack of indigenous leafy vegetables cultivation and the introduction of exotic food crops. In addition, the practice of harvesting indigenous leafy vegetables without cultivation does not support the reliable availability of indigenous leafy vegetables because there is no replenishment and maintenance of existing indigenous leafy vegetable species (Mavengahama et al., 2013).

The majority of the respondents who consumed indigenous leafy vegetables indicated that they obtained them mainly from the informal markets and retail shops. This finding is consistent with other research, which suggests that indigenous leafy vegetables are found in informal markets in rural areas (Gido et al., 2016). The findings from other Southern African countries such as Malawi and Mozambique portrayed non-structural informal markets (street vendors and markets) as the major selling outlets for indigenous leafy vegetables (Chagomoka et al., 2013). The commercialisation of indigenous leafy vegetables could promote cultivation, boost image, boost demand and contribute to income generation for many households in rural communities and informal settlements (Pitso & Lebeso, 2014).

Table 3: Consumption and availability of indigenous leafy vegetables by respondents (N=205)

	Variable	Frequency (%)
Do you eat indigenous vegetables?	Yes	187(92.6)
	No	15(7.4)
If not, why?	I do not like them	6(2.9)
	They are not available in the wild	5(2.4)
	I do not know how to cook them	0(0)
	I do not know what they are	2(1)
	Other	2(1)
Why do you eat indigenous vegetables?	I like the taste	76(37.1)
	They are cheap	12(5.9)
	They have many health benefits	101(49.3)
	They are easily available	17(8.3)
	Other	30(14.6)
Has the availability of indigenous vegetables increased or decreased in your area?	Increased	101(54)
	Decreased	86(46)
Where do you get the indigenous leafy vegetables?	Buy from informal market	165(80.5)
	Buy from retail shop	116(56.6)
	From home garden/yard	20(9.8)
	From community garden	3(1.5)
	From planting fields/plantations	50(24.4)
	From the wild	69(2.9)
In which months do you get fresh indigenous vegetables?	January	107(52.2)
	February	103(50.2)
	March	97(47.3)
	April	86(42)
	May	74(36.1)
	June	86(42)
	July	82(40)
	August	75(36.6)
	September	78(38)
	October	68(33.2)
	November	82(40)
	December	88(42.9)

Ethnicity and age associated significantly ($P \leq 0.05$) with indigenous leafy vegetable consumption (Table 4). Black individuals are more likely to consume indigenous leafy vegetables compared with other racial groups in South Africa. This is because indigenous leafy vegetable consumption constitutes part of indigenous knowledge systems in many rural African communities; hence, black people have been made aware of the consumption and nutritional benefits associated with indigenous leafy vegetables over many generations (Gido et al., 2017b). Respondents above 36 years of age consumed indigenous leafy vegetables every day or at least twice a week, which is more often than respondents aged less than 36 years (Table 5). Young people generally have limited knowledge of indigenous leafy vegetables and possess negative attitudes towards these vegetables, regarding them as not fashionable or trendy (Gartaula et al., 2020). This explains why most respondents above 36 years of age consumed indigenous leafy vegetables every day or at least twice a week compared with the respondents aged below 36 years in the WCDM, Western Cape province.

Table 4: Demographic variables with a significant ($p \leq 0.05$) association with the responses regarding consumption of ILVs (N=205)

Demographic variable		Response within ethnic groups regarding consumption of ILVs		χ ² p va
		Yes (%)	No (%)	
Ethnicity	Black	175 (95.1%)	9 (4%)	0.000
	Coloured	12(66.7)	6(33.3)	

χ² = Chi-Square tests

Table 5: Demographic variables with a significant ($p \leq 0.05$) association with the responses regarding how often ILVs are consumed (N=205)

Demographic variable		Frequency of consumption of ILVs			
		1. Everyday	2. At least twice a week	3. At least once a week	4. At least once a month
Age groups	18–25 years	0(0.0)	4(15.4)	11(42.3)	11(42.3)
	26–35 years	7(7.5)	7(7.5)	30(32.3)	49(52.7)
	36–45 years	4(8.9)	6(13.3)	14(31.1)	21(46.7)
	Above 45 years	8(33.3)	3(12.5)	4(16.7)	9(37.5)

χ² = Chi-Square tests

Conclusions and Recommendations

The majority of the individuals who were principally responsible for household food preparation and availability were females aged 35 years old or less and were mostly black individuals with no formal educational qualification. The most accessed indigenous vegetables were sweet potato, melon, pumpkin and cowpeas. Indigenous vegetables are consumed in the vast majority of households and the reasons for consumption include their health benefits, good taste and because they are cheap and readily available in the wild. The

households buy indigenous vegetables from informal markets and retail shops. Very few households obtain these vegetables from home gardens, community gardens or from the wild. The availability of indigenous vegetables has increased in some areas in recent years. Most of the indigenous vegetables are consumed by everyone in the households of the communities in informal or rural settlement at least once a week. The consumption of indigenous vegetables in these households can be associated with ethnicity and age. Indigenous vegetables constitute an important part of the diet of the people of this community, although they are available in local retail outlets, many people are not cultivating them in subsistence farming. It is recommended that the cultivation and consumption of indigenous vegetables should be promoted in this area. In addition, authorities can promote the inclusion of indigenous vegetables in existing food chains. Such steps will contribute to poverty alleviation, food security and dietary diversity in households.

References

- Apostolou, M. (2017). Why People Stay Single: An Evolutionary Perspective. *Personality and Individual Differences*, 111: 263–271.
- Barirega, A., Tabuti, S. R., Van Damme P., Agea, J. G., & Muwanik, V. (2012). Potential for Commercialization and Value Chain Improvement of Wild Food and Medicinal Plants for Livelihood Enhancement in Uganda Current Research. *Journal Biological Sciences*, 4(2): 108-116.
- Boedecker, J., Termote, C., Assogbadjo, E. A., Van Damme, P., & Lachat, C. (2014). Dietary contribution of Wild Edible Plants to women's diets in the buffer zone around the Lama forest, Benin – an underutilized potential. *Food Security*, 6(6): 833-849.
- Botai, M. C., Botai, O. J., De Wit, P. J., Ncongwane, P. K., & Adeola, M. A. (2017). Drought Characteristics over the Western Cape Province, South Africa. *Water*, 9(11): 1–16.
- Bvenura, C., & Afolayan, A. J. (2015). The role of wild vegetables in household food security in South Africa: A review. *Food Research International*, 76(4), 1001-1011.
- Bvenura, C., & Sivakumar, D. (2017). The role of wild fruits and vegetables in delivering a balanced and healthy diet. *Food Research International*, 99: 15-30.
- Chagomoka, T., Afari-Sefa, V., & Pitoro, R. (2013). Value Chain of Indigenous Vegetables from Malawi and 149 – Value Chain Analysis of Indigenous Vegetables from Malawi and Mozambique: Presented at the 4th International Conference of the African Association of Agricultural Economists, September 22-25, 2013. Hammamet, Tunisia. Available at: https://ageconsearch.umn.edu/record/161449/files/Takemore%20Chagomoka_%20Victor%20Afari-Sefa_%20Raul%20Pitoro.pdf. Accessed on: 15 June 2020.
- Chelang, P. K., Obare, G. A., & Kimenju, S. C. (2013). Analysis of Urban Consumers' Willingness to Pay a Premium for African Leafy Vegetables in Kenya: A Case of Eldoret Town. *Food Security*, 5: 591–595.
- Dweba, T. P., & Mearns, M. A., (2011). Conserving indigenous knowledge as the key to the current and future use of traditional vegetables. *International Journal of Information Management*, 31(6): 564-571.
- Faber, M., Oelofse, A., Van Jaarsveld, P. J., Wenhold, F. A. M., & Rensburg, J. van W. S. (2010). African Leafy Vegetables Consumed by Households in the Limpopo and KwaZulu-Natal Province in South Africa. *South African Journal of Clinical Nutrition*, 23(1): 30–38.
- Gartaula, H., Patel, K., Shukla, S., & Devkota, R. (2020). Indigenous Knowledge of Traditional Foods and Food Literacy among Youth: Insights from Rural Nepal. *Journal of Rural Studies*, 73: 77–86.

- Gido, E. O., Ayuya, O. I., Owuor, G., & Bokelmann, W. (2016). Consumer's Choice of Retail Outlets for African Indigenous Vegetables: Empirical Evidence among Rural and Urban Households in Kenya. *Cogent Food and Agriculture*, 2(1): 1–14.
- Gido, E. O., Ayuya, O. I., Owuor, G., & Bokelmann, W. (2017b). Consumption Intensity of Leafy African Indigenous Vegetables: towards Enhancing Nutritional Security in Rural and Urban Dwellers in Kenya. *Agricultural and Food Economics*, 5: 14.
- Gido, E. O., Ayuya, O. I., Owuor, G., & Bokelmann, W. (2017a). Consumer Acceptance of Leafy African Indigenous Vegetables: Comparison between Rural and Urban Dweller. *International Journal of Vegetable Science*. 23(4): 346–361.
- Govender, T., Barnes, J. M., & Pieper, C. H. (2011). Housing conditions, sanitation status and associated health risks in selected subsidized low-cost housing settlements in Cape Town, South Africa Habitat International, 35(2), 335-342.
- Guyu, F. D., & Muluneh, W. (2018). Wild Foods (Plant and Animal) in the Green Famine Belt of Ethiopia: Do they Contribute to Household Resilience to Seasonal Food Insecurity? *Forest Ecosystems*, 2-34.
- Hart, T. G. B. (2011). The significance of African vegetables in ensuring food security for South Africa's rural poor. *Agriculture and Human Values*. 28, 321-333.
- Ineke, V., Van Rensburg W, J., Zijl, V., & Sonja, L. V. (2007). Re-Creating Awareness of Traditional Leafy Vegetables in Communities. *Africa J. Food Agric. Nutrition and Development*, 7, 1–3.
- Rensburg, J. van W. S., Cloete, M., Gerrano, S. A., & Adebola, O. P. (2014). Have You considered Eating your Weeds? *American Journal of Plant Sciences*, 5(8): 1110–1116.
- Jansen van Rensburg, W. S., Van Averbeke, W., Slabbert, R., Faber, M., Van Jaarsveld, P., Van Heerden, I., Wenhold, F., & Oelofse, A. (2007). African Leafy Vegetables in South Africa. *Water SA*, 33(3): 317–326.
- Kasimba, S., Namkulo, C., Motswagole, B., Laubscher, R., & Claasen, N. (2019). Consumption of traditional and indigenous foods and their contribution to nutrient intake among children and women in Botswana. *Ecology of Food and Nutrition*, 58(3):281-298. [Online] Retrieved from: <https://doi.org/10.1080/03670244.2019.1598980> (9 July 2021).
- Lemke, S. (2005). Nutrition security, livelihoods and HIV/AIDS: implications for research among farm worker households in South Africa. *Public Health Nutrition*, 8(7):844–852
- Mabhaudhi, T., Chibarabada, T., Chimonyo, V., Murugani, V., Pereira, L., Sobratee, N., Govender, L., Slotow, R., Modi, A. (2019). Mainstreaming underutilized indigenous and traditional crops into food systems: a South African perspective. *Sustainability* 11:172. <https://doi.org/10.3390/su11010172>
- Maseko, I., Mabhaudhi, T., Tesfay, S., Araya, H. T., Fezzehazion, M., & Du Plooy, C. H. (2017). African Leafy Vegetables: A Review of Status, Production and Utilization in South Africa. *Sustainability*, 10(1): 1–16.
- Mavengahama, S., McLachlan, M., & de Clercq, W. (2013). The Role of Wild Vegetable Species in Household Food Security in Maize Based Subsistence Cropping Systems. *Food Security*, 5:227–233.
- Mayekiso, A., & Mditshwa, B. L. (2017). Production and Consumption of Indigenous Leafy Vegetables as Source of Food towards Improving Rural Household Diets: A Case of King Sabata Dalindyebo Municipality, Eastern Cape Province of South Africa. *International Journal of Agriculture Innovations and Research*, 6(3): 2319–1473.

- Mlambo, V. (2018). An Overview of Rural-Urban Migration in South Africa: Its Causes and Implications. *Archives of Business Research*, 6(4): 63–70.
- Mojeremane, W., Legwaila G. M., Madisa, E. M., Mmolotsi, M. R., & Rampart, M. (2011). Potential of traditional food plants in rural household food security in Botswana. *Journal of Horticulture and Forestry*, 3(6): 171-177.
- Muhanji, G., Roothaert, L. R., Webó, C., & Stanely, M. (2011). African indigenous vegetable enterprises and market access for small scale farmers in East Africa International Journal of Agricultural Sustainability 9(1), pp. 194-202.
- Mwema, B. K., Mutai, J. K., Lagat, L. K., Kibet, M., & Maina, M. C. (2012). Contribution of selected indigenous fruits on household income and food security in Mwingi. Contribution of Selected Indigenous Fruits on Household Income and Food, (January 2012), 2–8.
- Oladele, O. I., Campus, M., & Africa, S. (2011). Contribution of Indigenous Vegetables and Fruits to Poverty Alleviation in Oyo State, *Nigeria Journal of Human Ecology*, 4(1): 1-6.
- Pichop, G. N., Abukutsa-Onyango, M., Noorani, A., & Nono-Womdim, R. (2016). Importance of indigenous food crops in tropical Africa: Case study. *Acta Horticulturae*, 1128:315–321.
- Pitso, S. F., & Lebesé, R. M. (2014). Traditional Uses of Wild Edible Plants in Arid Areas of South Africa. *Journal of Human Ecology*, 48(1): 23–31.
- Rukundo, P., Hirut, G. B., Stephan, N., & Fekadu, B. (2014). Assessment of Drought Stress Tolerance in Root and Tuber Crops. *African Journal of Plant Science*, 8(4): 214–224.
- Sasson, A. (2012). Food Security for Africa: An Urgent Global Challenge. *Agriculture and Food Security*, 1(2): 1–16.
- Shumsky, S. A., Hickey, G. M., Pelletier, B., & Johns, T. (2014). Understanding the Contribution of Wild Edible Plants to Rural Social Ecological Resilience in Semi-Arid Kenya. *Ecology and Society*, 19(4): 34.
- Spaull, N. (2015). Schooling in South Africa: How Low-Quality Education Becomes a Poverty Trap. *South African Child Gauge*, 12, 34–41.
- Statistics South Africa. (2019). Towards measuring food security in South Africa: An examination of hunger and food inadequacy. Report: 03.00.14
- Taleni, V., Nyoni, P., & Goduka, N. (2012). People's perceptions on indigenous leafy vegetables: A case study of Mantusini Location of the Port St Johns Local Municipality, in the Eastern Cape, South Africa: Presented at "Towards Cornrgie III" University of Cape Town, 3-7 September 2012 [Online] Available at: http://www.carnegie3.org.za/docs/papers/260_Taleni_People's%20perceptions%20on%20indigenous%20leafy%20vegetables%20a%20case%20study%20of%20Mantusini%20location%20of%20 [Retrieved date: 25 January 2023.]
- Uusiku, N. P., Oelofse, A., Duodu, K.G., Bester, M., & Faber, M. (2010). Nutritional value of leafy vegetables of sub-Saharan Africa and their potential contribution to human health: a review. *Journal of Food Composition and Analysis*, 23(6):499–509.
- Van der Hoeven, M., Onsei, J., Greeff, M., Kruger, A., Faber, M., & Smuts, M. S. (2013). Indigenous and traditional plants South African parents' knowledge, perceptions and uses and their children's sensory acceptance *Journal of Ethnobiology* 9, 1-12.
- Vorster, I. H. J., Van Willem, R. J., & Sonja, L. (2007). The Importance of Traditional Leafy Vegetables in South Africa. *African Journal of Food, Agriculture, Nutrition and Development* 7(4), 1-13.

West Coast District Municipality (WCDM). (2012). West Coast District Municipality: A quality destination of choice through an opportunity society [Online]. Western Cape. Available at: <http://westcoastdm.co.za/> [Accessed on 31 March 2018.]

Western Cape Informal Settlements Status. (2013). The Housing development agency. [Online] Available at: http://www.thehda.co.za/uploads/files/HDA_Western_Cape_Report.pdf. [Accessed on 19 April 2015.]

West Coast District Municipality (WCDM). (2014). Integrated Development Plan 2012/2016. Available at: <http://westcoastdm.co.za/wp-content/uploads/2012/06/WCDM-IDP-2012-16-Final-Approved1.pdf>. Accessed on: 22 June 2015.

West Coast District Municipality (WCDM). (2016). Socio – economic profile [Online]. West Coast District Municipality. Available at: https://www.westerncape.gov.za/assets/departments/treasury/Documents/Socio-economic-profiles/2016/West-Coast-District/dc01_west_coast_district_2016_socio-economic_profile_sep-lg.pdf [Accessed on 31 March 2018.]