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Potential role of traditional vegetables in household food security: A case study from Zimbabwe

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The aim of the present investigation was to study the utilization of wild and semi-domesticated traditional vegetables in Zimbabwe. The study employed oral interviews and detailed discussions with 118 participants drawn from 8 different provinces of Zimbabwe. Plant use was found to be an integral part of the way of life of Zimbabweans, living in both rural and urban areas. This research has identified 32 edible traditional vegetables. Some of the commonly used plants as traditional vegetables are: *Cleome gynandra*, *Cucurbita maxima*, *Ipomoea batatas*, *Lagenaria siceraria* and *Vigna unguiculata*. Of the documented plants, some are non-indigenous indicating the diversity and dynamic nature of the food resource base in Zimbabwe. Traditional vegetables are a significant contributor to the socio-economic and health well-being of Zimbabweans, being either used in their raw state or processed form. They are traded locally, contributing a recognizable source of income especially for women. Some weedy traditional vegetables are left to grow amongst the cultivated food crops, hinting at some form of domestication. This indicates the possibility of the continued use of traditional vegetables in Zimbabwe, thus contributing to their conservation.

Key words: Food security, livelihoods, traditional vegetables, Zimbabwe.

INTRODUCTION

Traditional vegetables offer a potential to diversify food sources among both rural and urban communities, resulting in household food security. According to the FAO (1988), traditional vegetables are all plants whose leaves, roots or fruits are acceptable and used as vegetables by rural and urban communities through tradition, custom and habit. Traditional vegetables may not be indigenous to a country, but are usually associated with traditional production systems, local knowledge and have a long history of local selection and usage (Keller et al., 2004). Therefore, traditional vegetables are either wild, semi-cultivated or cultivated. Traditional vegetables are not normally subject to agricultural policy, research and extension activities but are consumed almost daily particularly in rural communities. Gomez (1988), emphasized the need for the development and exploitation of wild food resources through improved production practices, storage, preservation and utilization technologies if they are to play a significant role in food security. Reutlinger (1985), defined food security as access by all people at all times to enough food for an active and healthy life. Traditional vegetables have been found to play an important part in food security in South

Africa, especially as a dried food source during winter (Vorster and Jansen Van Rensburg, 2005). Studies in Kenya (Ogoye-Ndegwa and Aagaard-Hansen, 2003), found traditional vegetables and other wild food items to constitute an under-utilized resource when it comes to food and nutrition security in vulnerable communities. Traditional vegetables provide critical support to the usual agricultural production, cash income and insurance against drought and crop failure. Guaranteeing access to food means that people must have adequate resources in the broadest sense either to produce food or to obtain it in exchange with other things. This implies that food strategies are not only concerned with production issues but with the problem of income distribution. This is especially significant in Zimbabwe where 62% of the country is in the low rainfall regions where drought is not merely cyclical but endemic (Muir, 1994).

The purpose of this investigation was to examine the potential role traditional vegetables can play in meeting food security and development of sustainable livelihoods especially for small-scale, indigenously based agriculture.

Sustainable livelihoods comprise the capabilities, assets (including both material and social resources) and

Table 1. Study areas where ethnographic case studies were carried out.

Study area	Province	Coordinates	Date
Beitbridge	Matabeleland South	22°13'S29°59'E	Dec. 2004
Binga	Matabeleland North	17°38'S27°17'E	Dec. 2004
Umguza	Matabeleland North	19°40'S28°23'E	Dec. 2004
Harare	Harare	17°50'S31°05'E	Nov. 2005
Bindura	Mashonaland Central	17°20'S31°21'E	Nov. 2005
Goromonzi	Mashonaland East	17°52'S31°22'E	Nov. 2005
Chipinge	Manicaland	20°12'S32°38'E	Dec. 2006
Tanganda Halt	Manicaland	20°07'S32°27'E	Dec. 2006
Masvingo	Masvingo	20°05'S30°50'E	Dec. 2006
Shurugwi	Midlands	19°40'S30°00'E	Dec. 2007
Silobela	Midlands	18°59'S29°17'E	Dec. 2007
Zvishavane	Midlands	20°20'S30°05'E	Dec. 2007

Demographic characteristics of the participants

Characteristic	Female (68.6%)				Total	Male (31.4%)				
	<20	21-40	41-60	>61		<20	21-40	41-60	>60	Total
Age (years)	7	25	32	17	81	4	9	13	11	37

activities required for a means of living (Chambers and Conway, 1992). A livelihood is sustainable when it can cope with and recover from stresses and shocks and maintain or enhance its capabilities and assets both now and in the future, while not undermining the natural resource base (Ellis, 2000; Dalal-Clayton et al., 2003). Research by Maroyi (2009), demonstrated that properly managed plant resources in home gardens can improve local people's livelihoods and quality of life, reducing poverty; and fostering economic growth into the future on a sustainable basis. Similarly, Shava et al. (2009), found local knowledge and agricultural practices used for cultivating and processing traditional food crops to be responsible for sustaining local culture, livelihoods and community resilience. Most indigenous vegetables grow under the traditional system of agriculture where they appear in crop mixes and no specific inputs are applied (Machakaire et al., 2000). Continued cultivation and use of traditional vegetables over the past millennia has played a key role in the successful achievement of sustainable livelihoods in rural Zimbabwe. Wild and traditional vegetables grown in home gardens found in dooryards and agricultural fields provide rural families with income, food, nutritious vegetables, animal feed, etc. Therefore, this study explored how Zimbabweans have benefited and continue to benefit from traditional vegetables in their communities, specifically the use of traditional vegetables in household food security.

MATERIALS AND METHODS

This ethnographic case study focused its attention on both the rural and urban communities in Zimbabwe. The methods that emphasized both observation and participation were employed and

these generated mostly qualitative data. Interviews and dialogue with the resource users were an integral part of this research, enabling the researcher to understand a lot on the people's resource use culture (Cunningham, 2001). Field studies were carried out in eight provinces of the country represented by Beitbridge, Bindura, Binga, Chipinge, Goromonzi, Harare, Shurugwi, Silobela, Tanganda Halt, Umguza and Zvishavane Districts (Table 1). These eleven districts were selected based on different factors such as ethnicity, agro-ecological status, altitude, climate and soil conditions. Diversity between the villages ensured a wide range as possible in terms of uses and status of the traditional vegetables, thus being more representative of the diversity found within the country (Vorster and Jansen Van Rensburg, 2005). The final choice of the study areas depended on guidance and advice from the District Agricultural Extension Officers, who identified villages they knew used traditional vegetables.

Prior to any contact with the local people, the study and its objectives were introduced to the local traditional leaders and local Agricultural Extension Officers explaining the purpose of the research. Once the traditional leaders granted permission to proceed, individuals were approached for participation. The individuals were selected using wealth ranking (Grandin, 1988) to ensure that different wealth categories were represented in the study. Individual oral interviews were conducted with 118 participants between 2004 and 2007 (Table 1). During these four years, each location was visited several times and included both the rainy and dry seasons. Verbal informal consent was obtained from each individual who participated in the study. The aim and purpose of the investigation was explained to all participants. Interviews were conducted individually whenever possible in an attempt to avoid any direct influences from third parties and to assure that the data supplied by the informant were as direct and reliable as possible (Phillips and Gentry, 1993). The meaning of the term "traditional vegetable" was explained to the participants. In order to understand the patterns and use of traditional vegetables in various locations, participants were asked to indicate the traditional vegetables they used, details on the consumption habits, periods of availability, frequency of consumption and the preferred traditional vegetables.

Participants comprised both elderly members of the community as well as the youth (Table 1). Recurrent themes were uncovered in this study by a process of systematic content analysis. In its broadest sense, different researchers have emphasized various aspects of content analysis, from its capacity to generate quantitative descriptions by analyzing word counts (Silverman, 1993) to its ability to help researchers draw inferences from a text by breaking that text into discrete units of manageable data that can then be meaningfully reorganized (Weber, 1990). In this study, interview data was coded and sorted into themes. Inconsistencies and unique statements were noted and given particular attention. Voucher specimens were collected during walks with informants when encountered for the first time and again when they were flowering or fruiting, for easy identification. Specimens were deposited for future reference at the National Herbarium, Harare (SRGH, abbreviations according to Holmgren and Holmgren (2004).

RESULTS AND DISCUSSION

Table 2 shows the plants cited in Zimbabwe as being used as traditional vegetables. Out of the recorded 32 plant species, 31% are cultivated or semi-cultivated and the rest with the exception of *Adansonia digitata* and *Babiana hypogaea* are agricultural weeds. These weedy vegetables grow naturally and abundantly in farmlands, abandoned gardens, homesteads, along rivers and many other ecological areas where they usually occur as weeds and can exist independently of direct human action. Of the documented traditional vegetables, 53% are exotic while 25% are indigenous to Zimbabwe indicating diversity and the dynamic nature of the food resource base in the country. The remaining (22%) are cosmopolitan agricultural weeds. Similarly, the majority of traditional vegetables in Kenya exist as weeds of agriculture and are procured from the bushland and previously cultivated farmlands where they are communally gathered, and a few grow in kitchen gardens and along the lakeshores (Ogoye-Ndegwa and Aagaard-Hansen, 2003).

A. digitata, *Amaranthus thunbergii*, *Bidens pilosa*, *Ceratotheca triloba*, *Coleus esculents*, *Corchorus olitorius*, *Triumfetta annua* and *Triumfetta rhomboidea* were consumed in the drier areas of Beitbridge, Binga, Tanganda Halt and Umguza Districts. These traditional vegetables are collectively referred to as “poor man’s food” (Shava et al., 2009), because they are regarded as inferior and marginalized by the majority of people. These plants were the only sources of vegetables in these areas. They are rarely sold on markets because in general, they are not vegetables of choice. Some of these traditional vegetables may be used both as food and medicine. Field interviews revealed that some people consume *B. pilosa* to ease their “high blood pressure” worries, stomach pains, oral thrush, to boost the immune system and rheumatism. Keding et al. (2007), examined diversity and use of traditional vegetables in Tanzania, and showed that apart from their use as food, they are also popular for their preventative and curative medicinal properties. These traditional vegetable species also serve

as an insurance against hunger. They are of a wider diversity, with seasonal appearances and as such consumption of one species may alternate with others or with cultivated species in another season, hence a continuous supply of vegetables is realized (Makombe, 1995). In such dry areas, harvesting of wild vegetables is driven by the fundamental concern to secure food. Without relying on large irrigation schemes and various costly inputs, the climatic conditions impose periods of shortage of agricultural produce. In this context, the interest in traditional vegetables in Beitbridge, Binga, Tanganda Halt and Umguza Districts is to mitigate the consequences of insufficient agricultural production.

In weeding, the majority of rural Zimbabweans do not remove recognized edible weedy traditional vegetables, thereby ensuring a continued vegetable supply from the edible weedy vegetables. The weedy traditional vegetables mature quickly, they are usually harvested in the rain season (Table 2), before the staple foods that take much longer to mature. According to Figueroa et al. (2009), the ability of traditional vegetables to grow quickly and become harvestable within a short period makes them useful in sustaining nutrition-intervention programmes in rural communities. Previous research in Zimbabwe has shown that for about eight to nine months in a year, communal farmers depend on indigenous vegetables in either fresh or processed forms (Machakaire et al., 2000).

Although the methods of utilization varied from one household to another, boiling, steaming and frying were common and cross-cutting in almost all the households. Young leaves and shoots were boiled with salt and fried in cooking oil with other ingredients such as tomatoes and onions. Peanut butter mixture was sometimes used instead of cooking oil. The leaves can also be cooked mixed with dried meat. This preparation is usually done for *Amaranthus hybridus*, *Amaranthus spinosus*, *A. thunbergii*, *B. pilosa*, *Cleome gynandra*, *Cleome monophylla*, *Chenopodium album*, *Cucumis anguria*, *Cucurbita maxima*, *Moringa oleifera*, *Solanum nigrum* and *Sonchus oleraceus*. *Corchorus olitorius* and *Corchorus tridens* were cooked with bicarbonate soda or ash to lessen the mucilaginous state of the dishes. These plants were preserved for latter use by sun drying the fruits, fruit pulp, leaves and seeds (Table 2) after cooking. These results correlate strongly with the findings of Shava et al. (2009), who found sun drying to be an important food preservation procedure, allowing rural communities to fill the food gap during periods of scarcity, particularly in the cold and dry winter season. During such periods of food shortage, traditional vegetables previously preserved by drying become very important in household food security.

Vegetable preference

When the participants were asked to rate the importance

Table 2. Edible traditional vegetables in Zimbabwe.

Scientific name and voucher number	Vernacular name	Part used	Status	Availability	Drying
<i>Abelmoschus esculentus</i> AM102	Okra (E); derere (S); idelele (N); mandande (H)	Fruits	Cultivated	Summer / winter	Fruits
<i>Achyranthes aspera</i> AM106	Devil's horsehip (E); kasita (S); umdombe (N); nama (T)	Leaves	Arable weed	Summer	
<i>Adansonia digitata</i> AM108	Baobab (E); muuyu (S); umkhomo (N); mubuyu (T); muwu (H)	leaves; roots; fruits	Indigenous	Summer	Leaves; fruit pulp
<i>Amaranthus hybridus</i> AM543	Pigweed (E); mowa guru (S); imbuya (N)	Leaves	Arable weed	Summer / winter	Leaves
<i>Amaranthus spinosus</i> AM123	Thorny pigweed (E); mowa danga (S); imbuya (N); bongo (T)	Leaves	Arable weed	Summer	
<i>Amaranthus thunbergii</i> AM109	Poor man's spinach (E); bonongwe (S); imbuya (N); teka (H)	Leaves	Arable weed	Summer	
<i>Babiana hypogaea</i> AM495	Babiana (E); hwena (S)	Corms	Indigenous	Summer	
<i>Bidens pilosa</i> AM490	Black jack (E); muuwu (S); ucucuza (N); nama (T)	Leaves	Arable weed	Summer	Leaves
<i>Celosia trigyna</i> AM125	Silver spinach (E); mundawarara (S); isihlabe (N); sunku (T)	Leaves	Arable weed	Summer	
<i>Ceratotheca triloba</i> AM99	False foxgloves (E); munhuwenhuwe (S); inkuzane enkulu (N)	Leaves	Arable weed	Summer	
<i>Chenopodium album</i> AM102	Fat hen (E); mubvuzandadya (S)	Leaves	Arable weed	Summer	Leaves
<i>Cleome gynandra</i> AM308	Spider flower (E); nyevhe (S); ulude (N)	Leaves	Arable weed	Summer	Leaves
<i>Cleome monophylla</i> AM434	Spindle pod (E); musemwasemwa (S); Kalumekachisungwa (T)	Leaves	Arable weed	Summer	Leaves
<i>Coleus esculentus</i> AM128	Scrambled egg (E); tsenza (S)	Tuber	Arable weed	Summer	
<i>Colocasia esculenta</i> AM132	Mudhumbe (S)	Stem tuber	Cultivated	Summer / winter	

Table 2. Contd.

<i>Corchorus asplenifolius</i> AM127	Jute (E); gusha (S); idelele (N); ngenge (T); guse (H)	leaves	Arable weed	Summer	Leaves
<i>Corchorus olitorius</i> AM118	Jute (E); derere (S); idelele (N); telele buyu (T)	leaves	Arable weed	Summer	Leaves
<i>Corchorus tridens</i> AM528	Wild jute (E); derere (S); isileleda (N); siachikwiye (T)	leaves	Arable weed	Summer	Leaves
<i>Cucumis anguria</i> AM449	Wild gherkin (E); muchacha (S); amakaka (N); siila (T); chipwisambwa (H)	leaves	Cultivated	Summer	
<i>Cucumis metuliferus</i> AM113	Spiny cucumber (E); mugaka (S); siila (N); marakaraka (H)	Fruits	Cultivated	Summer	Fruits
<i>Cucurbita maxima</i> AM121	Pumpkin/ squash (E); muboora (S)	Fruits, leaves, flowers, seeds	Cultivated	Summer / winter	Leaves
<i>Galinsoga parviflora</i> AM107	Gallant soldier (E); teketera (S)	leaves	Arable weed	Summer	
<i>Hibiscus articulata</i> AM122	Wild hibiscus (E); derere hambakachere (S); idelele (N)	leaves	Arable weed	Summer	
<i>Ipomoea batatas</i> AM126	Sweet potato (E); mumbambaira (S); isibula (N); mushata (H)	Tubers	Cultivated	Summer / winter	
<i>Lageneria siceraria</i> AM117	Gourd (E); mupudzi (S); ikhomane (N); maranga (H)	fruits, leaves, flowers, seeds	Cultivated	Summer	
<i>Manihot esculenta</i> AM105	Cassava (E); mufarinya (S)	Tubers	Cultivated	Summer / winter	
<i>Moringa oleifera</i> AM309	Drumstick tree (E); zakalanda (T)	leaves; fruits; flowers; seeds	Cultivated	Summer / winter	Leaves
<i>Solanum nigrum</i> AM409	Black nightshade (E); mususngusungu (S); umsobo (N)	leaves	Arable weed	Summer	Leaves
<i>Sonchus oleraceus</i> AM111	Snow thistle (E); rurimirwemombe (S); ulimilwenkomo (N)	leaves; roots	Arable weed	Summer	
<i>Triumfetta annua</i> AM120	Derere renama (S)	leaves	Arable weed	Summer	

Table 2. Contd.

<i>Triumfetta rhomboidea</i> AM115	Burrweed (E); derere rechijonga (S); idelele (N)	leaves; roots	Arable weed	Summer	
<i>Vigna unguiculata</i> AM 98	Cowpea (E); munyemba (S); kanyangube (T); tinyawo (H)	seeds; leaves; fruits	Cultivated	Summer	Seeds; fruits

Abbreviations: E = English; S = Shona; N = Ndebele; T = Tonga; H = Hlengwe.

of the species used, the top five most important traditional vegetables were *I. batatas*, *C. maxima*, *Lagenaria siceraria*, *C. gynandra* and *V. unguiculata*, respectively (Table 3). *C. maxima* (pumpkin) was the most preferred traditional leafy vegetable (Table 3). A popular dish consisted of boiled terminal shoots, tendrils, leaves and small unripe fruits. Similar results were obtained by Ndoró et al. (2005), who recorded that two or three leaves of pumpkin (*C. maxima*) were harvested per reaping, and the pumpkin leaves were consumed three to four times per week during the rainy season. This is a popular dish in both rural and urban areas of Zimbabwe. Other frequently consumed traditional vegetables included *C. gynandra*, *V. unguiculata*, *Abelmoschus esculentus*, *C. anguria*, *A. hybridus*, *S. nigrum* and *C. tridens*. *V. unguiculata* was among the most preferred vegetables because not only can the beans be eaten green or dried and stored for later use but the leaves can also be eaten as green or dry vegetables. Other preferred traditional vegetables included *I. batatas*, *L. siceraria*, *Manihot esculenta*, *M. oleifera* and *Colocasia esculenta*. *I. batatas* is universally popular and usually substitutes bread during breakfast. *M. oleifera* is popular as both a vegetable and medicine. These plants can be regarded as central to the traditional diet of the Zimbabweans particularly those in rural areas.

The majority of the interviewees expressed satisfaction with these vegetable species, although differences were expressed in terms of availability and frequency of consumption (Table 4). Although *I. batatas*, *C. maxima*, *L. siceraria*, *C. gynandra*, and *V. unguiculata* were the most preferred vegetables, they are not always readily available when needed. All these five species are usually cultivated in home gardens unlike *C. anguria*, *A. hybridus*, *S. nigrum* and *C. tridens* which grow wild as arable weeds of agriculture and therefore, accessible to all including the poor. The use of wild and traditional food crops to augment cultivated staples in times of food shortages and as a livelihood sustenance strategy by the rural communities was also observed by Harris and Muhammed (2003), Shava 2005 and Shava et al. (2009).

The average consumption rate of *I. batatas*, *C. maxima*, *L. siceraria*, *C. anguria*, *C. tridens*, *V. unguiculata* and *C. gynandra* was described by participants as very often (Table 4). According to participants, the majority of people in both rural and urban areas universally like these vegetables. The consumption rate of *C. esculenta*, *Manihot esculenta*, *M. oleifera*, *A. esculentus* and *S. nigrum* was described as often (Table 4). The consumption rate of the remainder of the vegetables in Table 2 was described as rare to very rare (Table 4). Examples of such traditional

vegetables include *B. pilosa* which has a very low frequency of consumption due to its taste, which is characteristically bitter and somewhat discouraging. The reasons interviewees gave for the use of traditional vegetables included economics, convenience, preference and lack of alternatives.

More than 50% of the participants grew *A. esculentus*, *C. gynandra*, *C. anguria*, *C. maxima*, *I. batatas*, *L. siceraria* and *V. unguiculata* irrespective of whether climatic conditions favour their growth or not. This was done in order to provide a varied diet. The majority of participants (83%) prefer traditional vegetables that can be stored for later use than those which cannot. They also prefer vegetables with many edible parts than those with few edible parts. This explains why *C. maxima* is widely cultivated than its close relative *L. siceraria*. Traditional vegetables play an important contribution to the food security of rural populations by providing a vast array of foods which supply essential nutrients especially at times when other food sources are unavailable. In addition, processed and stored traditional vegetables help ensure a year-round food supply. According to Figueroa et al. (2009), hunger periods are periods of time in which the stocks of food staples, such as maize or cassava, are finished and household food security relies on available cash. Similarly, studies in Kenya (Orech

Table 3. Most important traditional vegetables and their ranking. These are arranged in order of decreasing importance as indicated by the number of participants who mentioned them as useful

Plant species	Participants mentioning preference	
	Number	%
<i>Ipomoea batatas</i>	116	98.3
<i>Cucurbita maxima</i>	110	93.2
<i>Lagenaria siceraria</i>	109	92.4
<i>Cleome gynandra</i>	105	89
<i>Vigna unguiculata</i>	103	87.3
<i>Abelmoschus esculentus</i>	102	86.4
<i>Cucumis anguria</i>	101	85.6
<i>Amaranthus hybridus</i>	100	84.7
<i>Corchorus tridens</i>	100	84.7
<i>Manihot esculenta</i>	98	83.1
<i>Colocasia esculenta</i>	95	80.5
<i>Moringa oleifera</i>	70	59.3
<i>Solanum nigrum</i>	65	55.1

Table 4. Key to frequency of consumption.

Relative term used	Frequency of consumption (days)
Very often	1-2
Often	3-7
Rare	8-14
Very rare	>15

et al., 2005) showed that traditional vegetables are important in food security, during times of drought or poor harvest and are also vital for income generation.

Nutritional value of traditional vegetables

Traditional vegetables are used as the base of soups, stews and relishes which accompany carbohydrate staples such as maize, sorghum, millet or rice. They make significant contributions to the nutritional well-being of humans providing us with a wide range of tastes and flavours to complement our starchy based diets. Traditional vegetables are often cited as having and providing vitamins such as B and C and even higher amounts of some minerals such as calcium and iron, as well as being rich in proteins (Kakudidi et al., 2004). Highly nutritious and well cited examples include members of the genus *Amaranthus*. Nakamatte and Bukonya-Ziraba (2004) found out that this genus has leaves containing high levels of essential nutrients and vitamins (A and C), iron and calcium when compared to exotics such as carrots and cabbage. The flowers, leaves and roots of *M. oleifera* are widely used as remedies for several ailments (Maroyi, 2006). The recently witnessed

widespread cultivation of *M. oleifera* (Maroyi, 2006) is due to its use as a dietary supplement.

Source of economic livelihood

Traditional vegetables are an important source of economic livelihood as some families harvest them for sale (Figure 1). The collection of wild and traditional vegetables for sale has always been the domain of women. Similarly, Shava (2005), found women to have more knowledge of leafy vegetables compared to men due to division of domestic chores (women being traditionally the cooks in the home), while men may be more versed with knowledge on indigenous fruits and edible roots. This practice offers a significant opportunity for the poorest people to earn a living, as producers and traders without requiring large capital investments. Chiefly traded are: *I. batatas*, *M. oleifera*, *L. seceraria*, *M. esculenta*, *C. esculenta*, *C. maxima*, *C. gynandra*, *V. unguiculata* and *A. esculentus*. This practice also provides substantial opportunities in many rural and per-urban areas. Women are still the key players in the production, processing and marketing of traditional vegetables. These activities are undertaken to provide supplementary cash required to meet school fees, cash

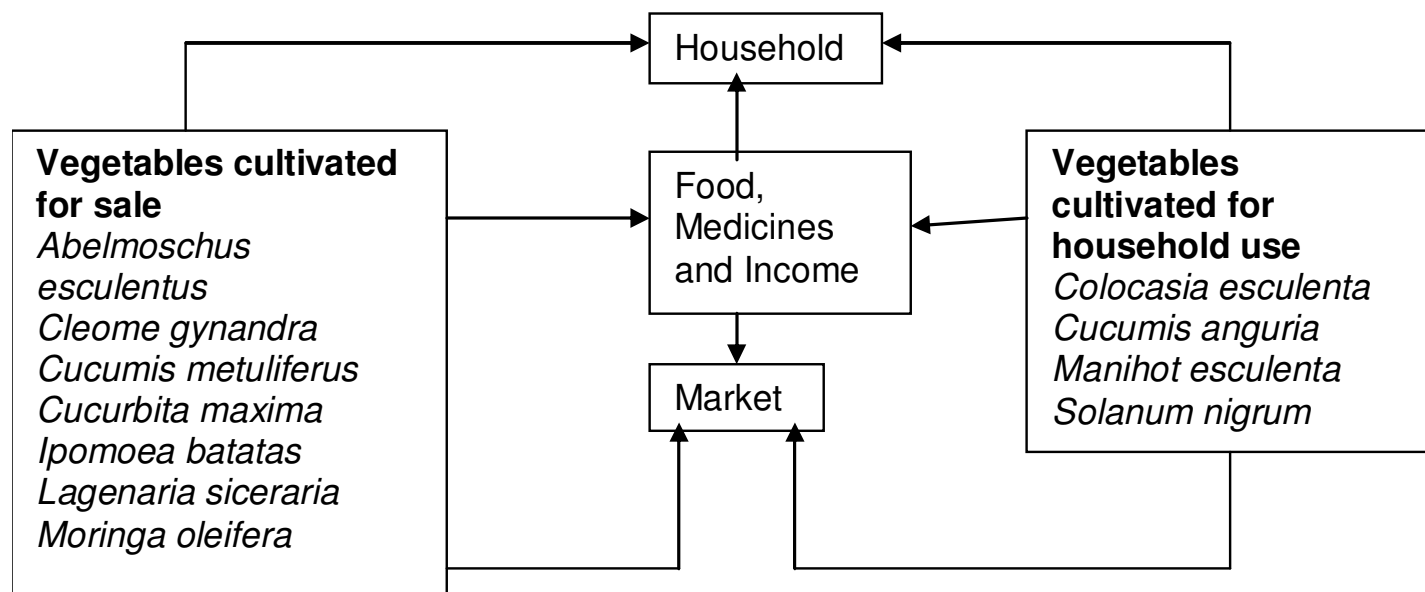


Figure 1. Conceptual model of vegetable cultivation and utilization in Zimbabwe.

for other household requirements, etc. This is a common practice especially amongst elderly women, selling their vegetables at business centres, street corners and market places where most inhabitants rarely get the chance of harvesting such vegetables due to their other commitments. Species like, *I. batatas*, *A. esculentus*, *C. maxima*, *C. gynandra*, *V. unguiculata*, *M. oleifera*, *L. siceraria* are cultivated on a large scale in peri-urban areas and also in rural areas. *M. oleifera* is increasingly becoming an important source of livelihood for a number of people as several villagers in parts of Matebeleland and Goromonzi have started nurseries to grow *Moringa* in large quantities for sale to other villagers and other provinces.

A crucial transition has been observed in this study, where destructive farming practices are being replaced by new and improved cultivation methods. This study revealed that the use of traditional vegetables can contribute to people's livelihoods as much as it impacts on the physical environment. Villagers are implementing a number of programmes aimed at addressing both environmental management concerns and livelihood issues. These include the establishment of nurseries, example, *M. oleifera* nurseries in Binga and Goromonzi, cultivation of vegetables in peri-urban areas and catchment areas particularly in Harare. *M. oleifera* is grown in nurseries as a community project or on a small scale at the family level. Apart from its use as a vegetable, it can function as windbreak, for erosion control, live fence, as an ornamental and medicine (Maroyi, 2006). The long term effect of these programmes include the following: better management of the environment, direct access to income by beneficiaries, nutrition improvement, technology transfer

and entrepreneurship, land improvement and food security.

Conclusion

This study unearthed a number of interesting findings with regards to the uses of plants as vegetables in Zimbabwe. Traditional vegetables in general are a strong and an integral part of the day-to-day livelihood of the majority of Zimbabweans. Some plants are more valuable than others. They also have far greater economic and social contributions to the people's lives in the communities such that every effort is being made to conserve and preserve these plants from the dangers of over-exploitation and subsequent extinction. Besides adding variety and flavour to diets, the traditional vegetables supply an inexpensive but quality nutrition to indigenous communities. It is hoped that further research will be undertaken to explore some of the aspects discussed in this study. This research should be aimed at providing a more comprehensive and detailed information on plants which are important to human welfare.

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