

**AFRICAN INDIGENOUS FARMING METHODS USED IN THE CULTIVATION OF
AFRICAN INDIGENOUS VEGETABLES: A COMPARATIVE STUDY OF TSITAS
NEK (LESOTHO) AND MABESKRAAL VILLAGE (SOUTH AFRICA)**

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Abstract

This paper is based on a comparative study investigating the utilization of African indigenous vegetables and farming methods in food security and nutrition in Tsitas Nek (Lesotho) and Mabeskraal village (South Africa). Critical and systems theories formed the theoretical framework and the philosophical background for this study. The findings revealed that both communities depended on African indigenous vegetables such as *Theepe* (Amaranthus), *Tenane* (Wahlengeria androsacca), *Rothwe* (cleome cynandra) and *Morogo-wa-Dinawa* (Vigna unguiculata) for food security and nutrition; secondly, they used indigenous as opposed to conventional farming methods for cultivation of African indigenous vegetables because they are cost-effective, environmentally friendly and sustainable. Furthermore, knowledge, techniques, socio-cultural protocols and skills of cultivation of indigenous vegetables using African indigenous farming methods lie with the elders. The domination of modern intensive, profit-oriented farming methods tends to marginalize sustainable indigenous farming methods that have the potential to promote biological diversity. In the final analysis, the author argues that both modern intensive and African indigenous farming methods have limitations and strengths. Hence, the integration of both systems in ensuring food security and nutrition in rural communities is pertinent.

Keywords: Indigenous farming methods, conventional farming methods, indigenous vegetables, cultivation, propagation, utilization, food security, biological diversity, monoculture.

Introduction

Indigenous farming methods are complex, environmentally friendly, sustainable, cost effective, culture specific and play a vital role in the cultivation of Indigenous Vegetables among indigenous communities. The need for alternatives to conventional farming methods especially with regard to the cultivation and propagation of African Indigenous Vegetables (AIVs) cannot be overemphasised. However, the challenges and prospects of the promotion of indigenous farming systems in ensuring food security needs to be investigated systematically. The author argues that conventional farming methods and technologies such as monocropping are costly, with environmental hazards and unsustainable. Environmentally friendly methods of farming must be adopted to improve sustainable food security among poor rural villages. According to the Britannica Encyclopaedia (2009) cultivation, means loosening and breaking up (tilling) of the soil while plant propagation is a process of creating new plants from a variety of sources like seeds, cuttings, etc. The World Food Summit of 1996 defined food security as existing “when all people at all times have access to sufficient, safe, nutritious food to maintain a healthy and active life”. Brookover (2012) states that nutrition is the sum total of the processes involved in the taking in and the utilization of food substances by which growth, repair and maintenance of the body are accomplished.

This paper is based on the study that investigated the utilization of African indigenous vegetables in food security and nutrition. The study was a comparative investigation of Tsitas Nek (Lesotho) and Mabeskraal village (South Africa). FAO (1998) defines the term Indigenous Vegetables or Traditional Vegetables as all plants whose leaves, roots or fruits are acceptable and used as vegetables by rural and urban communities through customs, tradition and habit. In general African indigenous vegetables refer to a crop species that is genuinely unique to a particular area, region or culture and has been produced and consumed over generations. In contrast, exotic crops are crops that have been imported from a certain region (Engle and Altoveros, 2000). The Basotho in Lesotho and Batswana in South Africa refer to these plant species collectively using the term ‘*morogo*’ a generic term for a group of food plants that are either cultivated in traditional subsistence farms or collected from the field where they grow naturally as members of the natural flora.

According to Van Der Walt (2004) and Van Rensburg *et al* (2004) AIV are called ‘*morogo*’ (*Sesotho, Sepedi, and Setswana*) or ‘*Imifino*’ (*Zulu and Xhosa*) which means leafy vegetables. Indigenous vegetables play a role in food security, nutrition, and culture and can provide employment opportunities (FAO 1995; Mnzava 1997; Mertz, Lykke & Reenberg 2001).

As a young and upcoming indigenous researcher, I grew up in the rural village of Tsitas Nek where the cultivation and propagation of African indigenous vegetables is important for the community sustainable livelihood especially for ensuring food security and nutrition. Most of the people in Tsitas Nek village are unemployed, with little or no formal education at all and they are engaged in indigenous farming. In my own village, most of the households are poor, headed by woman and with little or no support from government. Furthermore, this poor rural household do not practice commercial agriculture but they still rely on indigenous farming methods and technologies for the cultivation of indigenous vegetables and other food crops in ensuring food security and nutrition.

Based on my experiences over the years as a young rural girl, I always wanted to compare the farming methods and techniques of Basotho ethnic groups with those of other African ethnic groups such as Batswana. Moreover, one of the motivations was the fact that indigenous knowledge, indigenous vegetables, fruits, crops including the farming methods, tools and techniques have been dominated and often marginalised by Western knowledge systems and farming methods. The paper argues that there is also lack of systematic research on African indigenous farming methods including indigenous knowledge. In this paper, Indigenous Knowledge (IK) is the local knowledge that is unique to a given culture or society. IK contrasts with the international knowledge system generated by universities, research institutions and private firms. In his discussion on IK, Warren (1991) indicates that, it is the basis for local - level decision making in agriculture, health care, food preparation, education, natural - resource management, and a host of other activities in rural communities. The above view is supported by Flavier, De Jesus and Mavarro (1995: 479) that IK is the information base for a society, which facilitates communication and decision - making. Indigenous information systems are dynamic, and are continually influenced by internal creativity and experimentation as well as by contact with external systems. The author argues that African indigenous farming methods as opposed to conventional farming methods for the cultivation of African indigenous vegetables must be promoted because they are cost effective, environmentally friendly and sustainable.

Furthermore, knowledge, techniques, socio - cultural protocols and skills of cultivation of indigenous vegetables using African indigenous farming methods lies with the elders and there is a need for documentation and dissemination.

The domination of modern intensive, profit oriented farming methods tends to marginalize African indigenous farming methods that are sustainable and have the potential to promote biological diversity. In the final analysis, the author argues that both modern intensive and African indigenous farming methods have limitations and strengths. Hence, the integration of both systems in the cultivation of AIVs in ensuring food security and nutrition in rural communities is pertinent.

Brief Profile of Tsitas Nek Village, Lesotho

Lesotho covers an area of 30.335 square km and is completely surrounded by the Republic of South Africa (RSA). Over two - thirds (2 / 3) of the country is mountainous. It is divided into four agro - ecological zones, namely the mountains, foothills, lowlands and Orange (*Senqu*) - river valley. All the land in Lesotho is over 1.500m above sea level. Although Lesotho is regarded as rural area, Basotho have lived long on their land to appreciate the value of indigenous vegetables, wild fruits and in general natural vegetation (Ministry of Agriculture, 1995).

In villages around Mafeteng region especially in Tsitas Nek village most people still rely on indigenous vegetables for home consumption. Tsitas Nek village is in the west of Mafeteng District in Lesotho and has a population of about 3 500. Previous studies have shown that one of the major challenges is that, there is no recognition of growing and production of indigenous vegetables by the people of Lesotho due to the increasing influx of the Western vegetables in the local markets.

Brief Profile of Mabeskraal Village, South Africa

According to Breutz (1987), Kgosi Molopyane Mabe of Batlhako Ba Matutu in Mabeskraal village indicated that Batlhako are divided into Batlhako Ba Matutu tribe under Chief Mabe at Motsitle (Mabeskraal village) and Batlhako Ba Leema in Tlhatlhaganyane under chief Ntuane. The tribal community of Mabeskraal village has a population of about 450 000. This community falls under the jurisdiction of Moses Kotane Local Municipality within the Bojanala District Municipality in the North West Province.

The tribal totem is elephant (Tlou). The Batlhako tribe is of Nzunza – Ndebele origin whose praise name was Mahlangu and Matlhako in Setswana. Probably in the time of chief Musi or soon after when the tribe split, they lived at Mangolwana (nr. Premier Mine).

Methodology

The word methodology is often confused with methods in research. According to Irny and Rose (2005) methodology is a guideline system for solving a problem, with specific components such as phases, tasks, methods, techniques and tools. In other words it means a roadmap of conducting research or the analysis of the principles of methods, rules, and postulates employed by a discipline. The study was a comparative case investigation of the utilization of indigenous vegetables in ensuring food security and nutrition using case studies of Lesotho and South Africa. A comparative case study approach was used in order to have an in - depth understanding of the issues associated with the research problem. For instance according to Bless and Higson - Smith (2000) the case study is a way of organizing social data and looking at the objects of the studied as a whole.

In this study the mixed methods research was used, of which as a methodology, it involves philosophical assumptions that guide the direction of the collection and data analysis hence the mixture of qualitative and quantitative data in a single study. According to Maykut and Morehouse (1994:146) by employing mixed methods of data collection in a single research project, the researcher is to some extent able to compensate for the limitations of each method.

Questionnaires, interviews, focus group discussions, analyzing data from pictures taken, notes taken during focus group discussions and analysis made from the voice recorder. Yates (2004:71) argues that though the focus group discussion can be seen as a form of group in - depth interview, the difference lies in the fact that it is a group rather than one - to one interview. In addition, by getting the participants to discuss among themselves, it was a fast and easy way of collecting qualitative data in less time than would be needed for individual interview. Qualitative data were collected through interviews with key persons such as indigenous knowledge holders and practitioners including community elders. Focus group discussions were conducted with randomly selected groups from each village.

Qualitative data which were collected through interviews and focus group discussions were later written down from the voice recorder and the responses categorized and analysed through descriptive statistical analysis using SPSS/PC+ (Weber, 1990; Agresti and Finlay, 1996). A questionnaire was also distributed to the respondents for quantitative data which would support the qualitative data.

Content analysis has been defined as a systematic, replicable technique for compressing many words of text into fewer content categories based on explicit rules of coding (Berelson, 1992; GAO, 1996; Krippendorff, 1990). Holsti (1999) offers abroad definition of content analysis as, any technique for making inferences by objectively and systematically identifying specified characteristics of messages. This means the technique cannot be only used in the domain of textual analysis but may be applied in other areas such as drawing. Ethical issues such as permission, anonymity, consent and confidentiality were highly considered. All respondents were assured that the information collected would be used for the purpose of the research. All primary and secondary sources were acknowledged to avoid plagiarism.

The Socio - Economic and Demographic Characteristics of the Respondents

In order to describe the characteristics of the respondent community members from the two areas of study, they were asked through a questionnaire to indicate their age groups, marital status, educational attainments, ethnicity, household size, religious affiliation. The results are discussed below:

The majority of the male respondents seventy - six percent (76%) were adults aged between 31 and 70 and above. Among the female respondents, the majority eighty percent (80%) were between the ages of 31 and 70 and above. The percentages are for both study communities respectively. Information from focus group discussions revealed that the elderly age group constituted the knowledge holders for utilization of AIV's for food security and nutrition in the two areas of research.

In addition, from the two communities of research, the study found that there are still quite a good number of community elders who are repositories of the knowledge systems and practices that have shaped the lifestyles of the different age groups throughout. The study also investigated the marital status of the respondents. It was found that majority sixty - eight

percent (68%) of respondents from Tsitas Nek were married while in Mabeskraal majority forty - four percent (44%) are singles compared to thirty percent (30%) in Tsitas Nek followed by other status which hold less or no number for Tsitas Nek.

The study showed that the cultural life in the community of Tsitas Nek when coming to issues of marriage are still intact than in Mabeskraal and this married group understand better pertaining issues regarding the research problem.

As a result of high unemployment rate that existed in these two study communities, most men left the villages in search for employment opportunities in the mines, hence women were left at home to be head of the family and take care of the households. Frigo (2004) describes a household as “the basic residential unit in which economic production, consumption, inheritance, child rearing, and shelter are organized and carried out”. The household may or may be not synonymous with family. The study found out that only sixteen percent (16%) of the respondent households had three members as compared to eighty - four percent (84%) which had four to seven members. Interviews with key persons and focus group discussions showed that activities of utilization of AIV’s in ensuring food security and nutrition were family based and household members played a crucial and vital role in utilization processes from the two areas of study. The higher the household number the higher the collection and utilization due to the demand, and other agricultural activities as a source of livelihood.

Concerning employment status of the two communities, only twelve percent (12%) of the respondent community members were formally employed, five percent (5%) from respondent community members in Tsitas Nek and seven percent (7%) from respondent community members in Mabeskraal, while six percent (6%) indicated that they were self - employed (either in agricultural or the micro business sectors). The remaining fifty - six percent (56%) and twenty - six percent (26%) included those who were unemployed, students, volunteers or retired respectively.

The study revealed that thirty - two percent (32%) of the respondents had no formal education at all; fifty - one percent (51%) had less than matric; thirteen percent (13%) had matric and four percent (4%) had attained tertiary education. With respect to the respondents’ religious affiliation, the majority ninety - eight percent (98%) reported that they were Christians as compared to two percent (2%) who were Muslims respectively. Only these two percent Muslims are found in Mabeskraal.

Given the place location of each area, Tsitas Nek is in Lesotho while Mabeskraal is found in the North West province of South Africa which is dominated by Tswana speaking communities.

On the issue of ethnic composition between the two study communities, the study established that the bulk of respondent community members 100% in Tsitas Nek were Basotho while in Mabeskraal the whopping 99% were Tswana ethnic group compared to the remaining 1% which represented other respondents outside the above mentioned.

Presentation and Discussion of Research Findings

Mixed cropping farming system

Both in Mabeskraal and Tsitas Nek village mixed cropping farming system is viable and most common type of farming. Wilson (2005) states that mixed cropping farming system is a type of farming system in which farmers plant more than two kinds of plant species at the same time. Normally indigenous farmers mix number of crops that can provide with food to ensure food security, genetic diversity provides security for farmers against pests, disease and all types of risks (McGranaham et al, 1999). Usually the mixed cropping system is followed during the rainy season. That means the mixed cropping system act as an insurance against losses due to changing climatic conditions (Zimmer, 1998 & FAO, 1996).

Furthermore, Altieri (1987) and (Innis 1980) argue that in this type of farming system, the extreme use of available light, nutrient and water by plants with different heights, root and leaf structure is one of the primary reasons why traditional systems are highly efficient. Govinden (1984) states that the system increases the productivity of land and farmers usually claim improved yield. Mixtures of crop and varieties clearly provide farmers with a range of outputs and also represent a logical approach to coping with variable environments.

Shifting cultivation

Another type of farming which is also most common within the two areas is shifting cultivation. Stephen and Chrisman (2001) posit that in the shifting cultivation system or crop rotation forest is cut down and burned for soil fertility. There is a time whereby a piece of land is abandoned for soil fertility or recovering. This cultivation involves two methods which are partial system and integrated system. Partial system is aimed at economic interests

of a producer while integral system is more traditional and it is practiced almost all year round, more over it is practiced almost by members of individual indigenous communities. Russell (1988) states that the shifting cultivation system is well suited to nutrient poor soils in areas of low population density which means the system is well suited for both areas.

The Advantages of Indigenous Farming Systems

Indigenous African farming systems have a number of advantages like any other modernised system. Firstly, the indigenous farming systems have capacity to increase diversified farming income. Secondly, they are capable of yielding and increasing food production. Some varieties of a particular crop may be good for immediate consumption, while others are better for long term storage (McGranaham et al, 1999). Local farming systems gave potential to stabilize food production through diversification and reduction of dependency upon unstable market prices such as beans and others. Thirdly, African indigenous farming systems give local farmers an opportunity to manage different crops at the same time. Some African indigenous farming systems like hand - hoe involve plot holding technique that is very important for seed placement as fertilizer and water harvesting (Groetnfeldt, 2004).

Fourthly, the irrigation system used in the indigenous farming systems is less expensive than the one used in the modern farming systems. The irrigation systems are easily adoptable by various indigenous communities. These systems have proven their capacity to produce quality food for security. According to community knowledge holders there have always been community-based water management techniques that were used during drought mitigation. Furthermore, African farming systems have irrigation systems that are able to present sustainable solution to the demands of crop production. Last but not least indigenous farming systems require fewer pesticides and fertilizers for cultivation. Hence there is a growing evidence to indicate that diversification as a result of mixed or intercropping reduces people's susceptibility to drought and other risks (Agyare - kwabi; 2003).

The Disadvantages of Indigenous Farming Systems

In spite of the good advantages that the indigenous farming systems have to offer they are clouded with number of challenges even though farming is at the heart of the rural areas livelihood strategies. The systems are characterized by high competition of water.

Through mixed cropping indigenous farming systems may have a risk of low production due to high plants completion of water and space. Other plants may cause difficulties in management and operation of the other plants like during the application of fertilizers and harvesting process. Indigenous farming systems are faced by a challenge of local irrigation systems which stems are unreliable due to their crush construction method of irrigation of which creates a weak point for indigenous farming systems (Groetnfeldt, 2004). Another disadvantage is that the systems are labour intensive and their activities are mostly carried out by women of which leads to low output and ultimately to food insecurity (Rutatora, 2000). More threat is downing as animal and human compete for communal land.

The Socio – Cultural Protocols of African Indigenous Vegetables in Tsitas Nek and Mabeskraal

Indigenous seeds or seedlings collection

In both Tsitas Nek and Mabeskraal village there are socio – cultural protocols that needs to be taken into consideration. These protocols have been disseminated from time immemorial through word of mouth and they are undocumented. In Mabeskraal and Tsitas Nek village, women and men make arrangements for seed collection, transport, extraction, processing and storage. Bags are used to gather indigenous vegetables seeds or seedlings by hand. Indigenous vegetables need to be dried in order to open up and release seed. Indigenous vegetable seeds and seedlings grow naturally and locally. Some of the seeds such as for *Morogo wa Dinawa* can also be obtained from local farmers.

Methods used in seeds or seedlings collection

Among the Batswana and Basotho the seeds of indigenous vegetables such as *Rothwe*, *theepe*, *tenane* and *morogo wa dinawa* are collected when they are dry. Women dispatch the seeds by shaking it and use bags or clay to store the seeds. Shaking or threshing dried indigenous vegetables will usually suffice for extracting the seeds. The seeds are protected from over drying by covering them with leaves or other specially prepared mixtures before winnow method can be used to separate seeds from chaff. Bags or clay pots are also used to minimize the risk of over drying. Most seed or seedlings, if cleaned and stored properly, will remain viable for many years. Seeds or seedlings are transported by both men and women to the villages; they mostly travel by foot because they collect only few seedlings and seeds.

In most cases women engage with children in these kinds of activities. The activities are practiced in both communities and have been through demonstration and discovery methods over time.

Myths

It is a common practice among the Batswana and Basotho that women are not allowed to collect seeds or dig seedlings when they have committed abortion or a widow or during pregnancy or comes from a funeral and or even when they are menstruating. For instance, in Mabeskraal village, if a person comes from a funeral, there are herbs that are used for cleansing and purification. For instance, one can use ash to cleanse him or her when coming from a funeral. As compared to Tsitas Nek, Aloe Vera solution is prepared and used instead of ash. Among both communities, young girls are also forbidden from collecting seeds or seedlings of indigenous plants if they have had sexual intercourses, which is considered to be a taboo.

Mythological expressions have significant role among Batswana and Basotho especially in farming. But recently the myths are challenged because many youths attend schools and have established resistance over the knowledge due to modernisation and civilisation. Western education convinced people that indigenous traditions and oral knowledge are the causes of poverty and underdevelopment. According to knowledge holders and practitioners in both the two communities men and women are not allowed to dig or collect indigenous plants at 12h00 (*Ura ya sethoboloko or har'a mpa motseare*) midday because it is culturally regarded as the time of ancestors. When they do, it is believed that the hailstorms and hurricanes will destroy the villages because they have tempered with the silent hour and have angered "*beng ba lefatse*" ancestors.

Field Preparation

Batswana and Basotho believe that an environmental cleansing ceremony needs to be performed before the first rains and the field preparation. Among the Batswana and Basotho the ceremony is performed by a tribal traditional health practitioner or a renowned knowledge holder whom people believes is an expert in that particular area. Indigenous seeds are pre treated by using "*Sebabole*" before sowing. Among the Batswana in Mabeskraal village an indigenous herb called "*Mothuso*" is used in the field to help the seeds or seedlings to grow

without any disturbance. Batswana use an indigenous plant called *Mokgalo* to purify and cleanse the home gardens and the fields before cultivating especially when the owner of the field has passed away. Preparation of the field among Basotho and Batswana is done by men and women, sometimes by *Letsema* (corporative). Women and men use indigenous instruments such as "*Petlwana*" to prepare the field.

Basotho in Tsitas Nek can even use an ox plough of which community members have adopted the approach many years ago since it makes their work a lot easier. Today, modern equipments such as tractors and ploughing machines are used.

With home gardens, kitchen gardens and field preparation, it is important to know the soil moisture and fertility. Knowing the soil moisture is very important to reduce the impact of field operations on soil compaction. There are several methods that can be used to evaluate soil moisture in the field that are simple, practical, and relatively fast. Monitoring soil moisture throughout the season is important because soil moisture is one of the most limiting factors in crop production.

One method among both Batswana and Basotho of evaluating soil moisture is the hand - feel and soil appearance method. This method requires field experience in estimating soil moisture. This method requires a hand soil probe, training, and practice. Determining soil moisture by hand only gives relative soil moisture and is more accurate than other methods.

Planting

Planting of African indigenous vegetables is done as soon as the rain fall normally starting from October continues up until January. In order to ensure food security mixed cropping is normally encouraged (planting the seeds of millet, sorghum, *morogo wa dinawa*, beans, cowpeas, melons and herbs).

Local farmers have long favoured crop diversity that is the reason why even today indigenous communities still perpetuate the system of crop combination during cultivation. Men are the ones who usually plant. However, if the husband has passed away or is not available, women can also do the planting process. Women and men water the soil or plots two to three days before planting to moisten the soil as to have the desired moisture.

A woman who has committed abortion is not allowed to plant. A widow is not allowed to do planting on another person's field. However, she can only do planting in her own field after cleansing and purification. Planting is not allowed at 12h00 midday or midnight.

Methods of planting

In both Mabeskraal and Tsitas Nek the seeds are thrown randomly around the field. Planting in rows, in seedbeds and seed trays is a modern invention. Both men and women do direct sowing of seeds or seedlings or transplantation. A ritual is conducted normally before planting. Indigenous herbs are burnt around the four corners and the centre of the field. For instance in Mabeskraal indigenous herbs such as *Seropwe* and *Mhetola* are used to help seeds or seedlings to grow effectively. This ritual can be conducted by anybody, not necessarily by a traditional healer.

Organic kraal manure is used in home garden and kitchen gardens. Organic planting is preferable in these communities because they make the best use of local natural resources rather than the use of chemicals or fertilizers and pesticides. The use of external inputs is reduced as far as possible. Organic kraal manure is believed to be the best since it has never led farmers and households down. In addition, it brings the whole peace to the environment due to its component parts (Nkoko Mma Itu and Ntate Tseliso).

The knowledge holders continues to say; the soil minerals, organic matter, micro-organisms, insects, plants, animals and humans when they interact, that's the best stability and harmony nature can offer.

Disease and pest control

Wood ash is used to keep pest out of harvested crops. These can keep for up to 2 – 3 years without pest infestation. In Tsitas Nek and Mabeskraal *Motlhwa/Mohloa* (grass) also has negative impacts to indigenous plants. The only way to control it is to dig it out. Man and women use an instrument called "*Kepu / kepi*" to dig it out.

In Mabeskraal birds can also be danger to seeds or seedlings. Young boys and girls are responsible for chasing birds in the morning and evening and they call this practice "*Go Leta Thaga*" which laterally means to await and chase away birds from destroying the crops and

eating seeds or seedlings. While in Tsitas Nek there is a ritual performed which is called “*ho Upa*”. The ritual is done to chase away birds and insects.

Sticks with mud were also used to chase birds from the crops or plants. Sometimes they use a “*Sjambok*” or “*Sephali*” to chase birds because it makes noise and scares the birds. Some of the disease that attack indigenous vegetables in Mabeskraal are called “*Ngadule*” in local language” (small, black, watery insects) while in Tsitas Nek indigenous vegetables are attacked by “*Hoaba*” and are only treated and washed away by rain from plants such as *dinawa* and *rothwe*. There are also herbs used to treat worms that eat Mabele and other indigenous vegetables.

Weeding

Creeper crops cover the soil and are also used to suppress weeds and also protect the soil from extreme heat. Weeding is done normally by women or *Letsema* can be organized. In both communities women have a lot of knowledge and skills to do weeding and they use their own hands or “*Mogoma*” (hoe).

Harvesting

In Mabeskraal before harvesting is done, the local chief must give the permission and he is the one who must be given the first harvested crops before anybody in the village. This goes according to the protocols from the chief, to the herdsman, to the head of family and the family. Harvesting is done by both man and women and they have the skills and knowledge to reduce loss of product and quality.

The practice of “*Go Ronopa*” was used to ensure or reduce loss of product and quality. This means that after harvesting, one goes back and collect whatever was lost or left behind during harvesting. Harvesting is done skilfully and carefully. Each family can organize an occasion of feasting to celebrate the harvesting season by preparing traditional beer and invite a small group of people. *Rothwe and morogo wa dinawa* are harvested in November until April. Theepe is harvested while it is still small, this happens in both villages.

Among the Batswana people in Mabeskraal the harvest is stored in big bags or in a built house called “*Sefalana*” (Silos) while in Tsitas Nek people use big bags called “*Bale*”. *Sefalana* is a house without doors but only have a small window which is used as entrance.

Not everybody is allowed to go and store bags inside the silos. Only certain people are allowed to do that job. A donkey card and a cow card were used to transport the harvest to the village. In Tsitas Nek during harvesting time much of the practices are more meaningful considering which type of crop is being harvested. For instance, if mabele is harvested there are different ritual performed accordingly at different stages through the entire process but with the indigenous vegetables not much is done because they are harvested at different intervals according to the needs of each household.

Post harvesting

Both men and women in both villages are involved in post harvesting. Indigenous vegetables such as *Rothwe, theepe, tenane, and morogo wa dinawa* are well preserved to increase shelf-life. Indigenous vegetables are cooked then sun dried thoroughly and stored in plastic bags or in some air tight closed containers. Wood ash is also used to keep the harvest fresh. *Morogo wa dinawa, theepe, tenane, rothwe* and cowpeas is also cooked, crushed, sun dried and stored in bags or in a clay pot. This method of preservation controls pests and building up of mould. The household can re cook when they want to eat. Mostly they are used as relish during dry season within the two communities.

Conclusion

The critical food security factors need urgent objective analysis. With regard to food security, the rural areas face special challenges. The rural population mostly live in absolute hunger and are chronically hungry which directly affects their lives. “*Tsie e fofa ka mokota*” which means people cannot carry out any meaningful activity on hungry stomach. Resultantly, this calls for more agricultural land and water management. Both modern intensive and African indigenous farming methods have limitations and strengths. Hence, the integration of both systems in ensuring food security and nutrition in rural communities is pertinent.

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