

THE REVIEW ON THE IMPORTANCE OF BANANA AND PLANTAIN VARIETIES THAT WERE/ARE REGARDED AS THE GOLD OF SOME TRIBES IN TANZANIA

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Abstract: In Tanzania, banana breeding and research programs have their efforts focused on breeding for resistance to diseases, pest, and yields. Less or no research has focused on economic impact of local varieties preferred by banana consumers. The banana preferred landrace cultivars (Mchare, Sukari Ndizi, Mzuzu, Ndyali, Nshakala and Ntobe), which are regarded as gold of some tribes are now wiping away. The wiping away is reported due to pest, disease, climate and introduction of new cultivars, therefore demands special research attention. This review used online resource to identify challenges facing banana and plantain varieties that are regarded as gold of some tribe. These banana varieties have proven to fetch higher market prices locally and internationally due to their preferred good qualities and traditional roles. Many banana growing ethnic groups have valued these cultivars as medicinal, main source of special foods and cash, as well as valuable item used in traditional and cultural events besides being attractive ornamental plants. Susceptibility of these varieties to disease and pests, low yield traits together with lack of proper research attention, makes them slowly disappearing in the banana production eco-system. This calls for attention to all banana Stakeholders to come together and find out a proper link between the breeding and end users (consumers and market stakeholders), that will make these banana as key commodities to be researched so that their contribution to rural poverty eradication can be realized.

Keywords: Cultivar, Stakeholders, Pest, Disease, Diploid, Polyploid, Inter and intraspecific Hybridization, *Pseudocercospora fijiensis*, *Musa acuminata*, *Musa balbisiana*.

1. INTRODUCTION

Tanzania as other countries in the world produces different fruits ranging from annual to perennial fruits, which includes banana, Avocado, coconut, clementine, guava, grape, jackfruit, lemon, lime, lychee, mango, orange, okra, passion fruits, papaya, pear, pineapple, tamarind, tomato, strawberry and watermelon (Match Marker Associate, 2017; Tanzania Commercial Guide, 2021). Among others bananas are regarded as the most important and widely cultivated fruit in the country and linked socially and economically by many tribe practices (Maruo, 2002 & 2007; Ndunguru, 2009; Komarek et al., 2012; Kubo and Kilasara, 2016). In terms of banana production, Tanzania is the second to Uganda in East Africa with four major banana-growing regions, which includes Kagera, Kilimanjaro, Mbeya and Arusha (Ndunguru, 2009; Lucas and Jomanga, 2021).

In Tanzania, three ethnic groups were reported and known in the past as the banana-eaters including the Chagga, Haya and the Nyakyusa (Maruo, 2007), other ethnic groups includes the Meru (meru and arusha tribes) and Pare (Brown et al., 2017), the Safa from Mbeya, Luguru from Morogoro, Ha from Kigoma, Nyambo, Subi and Hangaza from Kagera. The major strength of banana in Tanzania as it is to other countries, its production of fruits all year around and high yield per unit area (Maruo, 2007; Perrier et al., 2018; Lucas and Jomanga, 2021). This property is very important in highly populated areas of Arusha-Meru, Kilimanjaro, Mbeya (Tukuyu and Busokelo), Ileje-Songwe, Bukoba (Bukoba urban & rural), some parts of Morogoro region (areas around Uruguru Mountain) and Songea-Mbinga distric. Banana in Tanzania is a source of income, special staple food for some ethnic groups, medicinal value, for prestige and inheritance value, employment and research (Maruo, 2002 & 2007; Lucas and Jomanga, 2021; Jomanga and Lucas, 2021). In Tanzania highland areas (Arusha, Kilimanjaro and Mbeya), 30% of the total banana produced is consumed at the homestead while the remaining 70% is sold in the local market, backing significantly in food security and income steadiness in the country (Kimunye et al., 2021). For banana produced in Bukoba-Kagera northern west part of Tanzania, are mostly consumed locally in Kagera and some are carried to Mwanza south of Lake Victoria, the second largest city of the country (Maruo, 2002). Much of banana consumed in large two cities of Dar es-salaam, and Dodoma are received from all over banana growing regions of Tanzania.

The origin of banana and plantain cultivars; *Musa acuminata* (A genome) and *Musa balbisiana* (B genome) are wild diploid ($2n = 2x = 22$) banana, ancestors of several hundreds of parthenocarpic *Musa* diploid and polyploid cultivars (Šimoníková et al., 2020). The cultivated banana cultivars show multiple origins through inter- and intra-specific hybridizations of the two wild diploid banana species (Simmonds, 1962; Heslop –Harrison and Schwarzacher, 2007; Ortiz and Swennen, 2014). Edible bananas have either 22, 33 or 44 chromosomes representing diploid, triploid and tetraploid cultivars (Stover and Simmonds, 1987). Cultivated banana and plantain are sterile, the fruit developing parthenocarpically without seeds, with only the vestiges of abortive ovules (Cheesman, 1932; Jones, 2018). With respect to the involvement of *Musa* spp. to hybrids production, *Musa acuminata* (A genome, $2n=2x=22$) was involved in all the cultivars, *Musa balbisiana* (B genome, $2n=2x=22$) in many and *M. schizocarpa* (S genome, $2n=2x=22$) and the Australimusa (T genome, $2n=2x=20$) in a few of them (Cheesman, 1932; Jones, 2018; Šimoníková et al., 2020).

Bananas were introduced into East Africa by Arab traders over 2000 years ago (Batte et al., 2019). Cooking bananas commonly referred to as East African Highland bananas (EAHB) are the commonly widely grown banana varieties (Perrier et al., 2018). The EAHBs comprise diploid and triploid bananas, which include Mchare a diploids (AA) bananas that is grown in the Kilimanjaro and Arusha northern part of Tanzania, in Mbeya and Ruvuma (southern highlands) regions (Perrier et al, 2018; Lucas and Jomanga). The plantain triploid (AAB) are widely grown in Mbeya, Songwe, Morogoro and Ruvuma. The triploid EAHBs (AAA), include the Matooke like Ntobe and Nshakala (cooking) and Mbidde (juice/beer) bananas in the Lujugira-Mutika subgroup (Kimunye et al., 2021).

The following banana and plantains are regarded as valuable item of social economic and traditional important in their respective tribes includes; Mchare locally known as Mshale is for Chagga, Pare and Meru tribes in Northern part of Tanzania, the matooke includes Intobe and Nshakala for the Haya, Subi, Hangaza, Nyambo of North West Tanzania. The Nyakyusa and Safa of the southern highland of Tanzania are known for loving Mzuzu the plantain and Ndyali suspected to be mchare variety in origin due to resemblance (Mpoki personal communication). The discussion of on social economic roles of these banana varieties are presented here under;

Mchare

A Mchare subgroup, diploid (AA) banana with cultivars of high phenotypic variability (Nwawele et al. 2019), the subgroup is characterized by many morphological traits that includes a slender pseudostem, often pale in colour but with dark blotches in some cultivars, like the 'Ijihu inkundu' (De Langhe et al., 2001), an erect foliage habit, a sub-horizontal to pendulous bunch bearing fruits with marked ridges and a pronounced bottlenecked apex, much recurved on a tightly packed bunch, slightly resembling the fruits of the AAB Plantain subgroup, though a little smaller (Nwawele et al. 2019; Doto, 2019). But the subgroup displays extraordinarily wide diversity at inflorescence and fruit level, with a consequent distinct vernacular name for each variety that often refers to a morphological particularity. According to Šimoníková et al. (2020), all the Mchare were genetically similar despite of being morphologically different, But according to the study by Perrier et al., (2019) and Nwawele et al. (2019), assessed closeness using 21 microsatellite markers pairs the cladistic closeness on diploid AA-Mchare accessions with AAA-Lujugira-Mutika result showed that, the eight studied accessions of AA-Mchare were

different from each other. AA-Mchare Malelembo was fairly well established to be among the ancestor of Lujugira-Mutika. Mchare subgroup shared some alleles with both the subspecies zebrina and banksii of *M. acuminata*, with a likely origin towards Borneo, Java or Sumatra (Perrier et al., 2019). This calls for farther research to be conducted to understand the molecular and metabolomic differences among Mchare varieties.

There are several commonly grown varieties of Mchare that includes; Mchare Mlelembo, Huti white, Mchale Laini, Kahuti, Ijihu inkundu, Makyughu 2, Huti Green, Akondro mainty, and others are Njuru, Muraru Mchare, Majimaji, Muraru, Muraru White and Muraru Red (IITA-Arusha; Kubo and Kilasara, 2016; Dotto, 2019). Mchare subgroup are found in the Meru, Moshi and Rungwe regions in TZ, are used to make local gin and beer, as well as kiburu and the staples machalari and mbalaga (Ichinose, 2017; Marmo et al., 2020). Mchare Mnyenyele is preferred for making machalari (Ichinose, 2017; Marmo et al., 2020). Mchare for the Chagga, Meru and Pare is embedded in their culture and is seen to be as old as the people themselves (Ichinose et al., 2017; Perrier et al., 2019; Dotto et al., 2019). Stories about bananas and coffee contain insights into gendered histories, that the two crops to the chagga and meru, banana are regarded as women crop and coffee for men (Williams, 2022). Through informal communication with small holder farmers in the two regions of Arusha and Kilimanjaro, where the authors have been working for over 7 years, the preferred variety among these was Mchare Laini/Mchare Mnyenyele. Mchare Laini is good in its colour, taste-aroma, texture and big bunch. Traditionally Mchare banana is a symbol of respect and wealth among these tribes. In these societies a family has to have at least one mat among many other different grown varieties for the guest/visitors meal. Some varieties of Mchare sub-group are regarded as special meal for special occasions.

In farmers perspective variety naming is a challenge there is mixed up in naming Mchare sub-group needs attention from research taxonomists to properly identify the different Mchares, this information can be helpful to breeders. For example Mchare Laini known by farmers is quite different from the Mchare Laini known by Researchers, sometime Mchare Mlelembo is Mchare Laini to farmers. This calls for proper naming system that will help both farmers and researchers.



Mchare; Photo
by Kennedy J.



Mchare; Photo
by Kennedy J.

According to Ichinose (2017), Mchare is an important cash income source for all households with or without coffee cultivation. This is probably because of the expansion of the banana market owing to the development of the transportation network and the expansion of consumption caused by the urban population increase. The stable consumption among the village and stable cash income from the market are considered as a motivation to keep growing banana in this area.

Current the Mchare varieties grown in these regions are seriously affected by fusarium wilt disease (*Fusarium oxysporum* fsp. *cubense*), if not checked the disease can wipe away this cultivars. The disease is threatening the food security and economy of these areas, because Mchare is the only banana that fetches higher prices at the market. Due high population pressure in these areas many families have small areas for agricultural activities and banana is the only crop that can sustain

them. Endeavors to replace this susceptible banana varieties by other varieties like FHIA, Matooke etc. has been facing a lot of challenges like poor taste and quality. The call is made to Stake-holders including Researchers, Institutions, Political groups and Scientist to unite and serve the future of these vulnerable cultivars and the population around these regions.

Sukari Ndizi

Sukari Ndizi is amongst the most popular dessert banana and most widely distributed dessert cultivar in East African, including Tanzania (Pillay et al., 2003), the other name is known as Kameramasenge^o or „Calole^o“ (Buregyeya et al., 2021). Pilay et al., (2003) and Onyango et al., (2011), described Sukari Ndizi as a triploid and desert banana with an AAB genome same as Silk, Mysore and Prata. The plant has slender to normal pseudostem of medium to tall height with green yellow with brown rusty brown pigmentation, has an intermediate leaf habit and slender it may grow tall to >3 m. The petiole margins of Sukari Ndizi are curved inwards, a balbisiana characteristic (Onyango et al., 2011). It has a cream compound petal basic colour without pigmentation, in clear contrast with the pink/pink-purple pigmentation of Mysore, Silk, Prata and AB Kisubi (Onyango et al., 2011). It has short pedicel and the ovules are arranged in two rows, an acuminata characteristic, unlike Mysore and Prata. Sukari Ndizi has no blotches on the leaves of water suckers, the rachis is always bare and has smaller fruits (≤ 15 cm) with short pedicels. The bunch of this banana has average weight of 8 kg with an average number of 8 hands per bunch and a mean of 100 fruits per bunch. The phenogram shows that Sukari Ndizi is closer to Silk than to Prata (Onyango et al., 2011).

Sukari Ndizi traditionally in banana growing areas was regarded as another valuable banana that was fetching a lot of money from all over the country due to its good quality. It is the best because when it ripens, it is very sweet compared to other desert cultivars grown in Tanzania and elsewhere. It was also noted by Slow Food Foundation for Biodiversity to be the ark of sweetness, is preferred by all tribes in Tanzania (<https://www.fondazione Slow Food.com/en>). Sukari Ndizi is now very scarce, and consumers have ended-up using FHIA or Bogoya (Marmo et al., 2020). The scarcity is due to Wilt caused by *Fusarium oxysporum* f.sp *cubense*, which has become more serious, causing decline in yield and poor quality fruits (Tushemereirwe et al., 2000).

The Sukari Ndizi is a nationally preferred banana variety which is currently facing a challenge of mixing up of different varieties that are devaluing the original Sukari Ndizi (Apple banana) known. It is reported that at least 8 cultivars belonging to different genomes are called Kisukari or Sukari Ndizi, this is a good example of confusion that devalues some important cultivars like Sukari Ndizi (Evers, 1992). No research focus is directed toward this variety despite of being banana of high value to farmers and consumers.



Sukari Ndizi
Photo by Kennedy J.



Sukari Ndizi photo
by Ashiraf M.

Mzuzu and Ndyali

Mzuzu is the variety of plantain banana, plantain is a subgroup of hybrid triploid AAB bananas generated by hybridization between *Musa acuminata* and *Musa balbisiana* (Maruo, 2007; Nzawe, 2018). The center of origin of plantain is presumed to be Southern India where a great diversity of AAB bananas is observed. The indicator characteristics that distinguish the plantain group from other AAB bananas are the conditions that the color of compound petal, a part of male flower ranges from yellow to orange, the male axis is absent, or if present, it is covered with bracts or flowers, fingers are slender and angulated, and that the fruit flesh, even when it is ripe, is starchy and inedible without cooking. Ndyali a diploid Mchare banana, which phylogenetically resembles Ijihu Nkundu and Mchare Mlelembo. Mzuzu and its close related plantain (Nzawe, 2018). Ndyali are widely grown in Mbeya and Morogo region. Plantains are believed to have originated in Southeast Asia, two groups of plantains are thought to have a common origin: the horn plantain and the French plantain (Nzawe, 2018).

The Nyakyusa have developed cultivation skills, tools, vocabulary, and varietal diversity in relation to the plantain, and have also created symbolic meanings for the plants that are related to prosperity, the idea of the sacred, and gender values that consolidate the society (Maruo, 2007). The Nyakyusa, Luguru and Safa live on plantains (AAB) and other people in cities and towns. The traditional uses of plantain in Tanzania is not well established as compared to the West Africa, it is reported Rossel, (1998), that the Ha of Kigoma in west Tanzania use the umuii cultivar in religious sacrifices and that the Nyakyusa of Southern Highland of Tanzania, they do plant sacred banana for family ceremonies, in which the head of clan prays to the ancestors (Rossel, 1998). In the West Africa, south Nigeria, plantain plays an important role in rituals, which explains why it is the subject of certain taboos (Rossel, 1998). The Epie grow plantain near their houses to ward off evil spirits. In Ghana, the white pulp of the fruits, remind people of the white robes worn by kings and used as offerings to the gods in case yams are not available (Rossel, 1998). In Cameroon plantain leaves are used in all kinds of rituals and ceremonies, such as the enthroning of chiefs, or burials. As in Nigeria, married women on Zanzibar, especially when pregnant, do not eat twin bananas, also for fear of giving birth to twins (Rossel, 1998).

Mzuzu and Dyali are seriously affected by weevil and fusarium wilt respectively, sigatoka is another threat to these varieties. For example wide cultivation of Mzuzu is not easy in many areas of the country due to presence of weevil (*Cosmopilite sordidus*) that affect seriously the growth and performance of this variety. For example a border of Mzuzu mat are growing around some IITA field in Arusha have never produced or hardly produce a bunch, normally dies during the early vegetative growth. The issue of naming ambiguity is also reported for the reported nine plantains and other banana by (Maruo 2007), in Mbeya. Certain varieties, such as the plantain variety Mbundya (AAB) and the dessert banana Mwamnyila (AAA), have two color forms in the stem or fruit, but the Nyakyusa do not use this characteristic to distinguish the varieties (Maruo, 2007). The failure of farmers to distinguish certain varieties from others creates communication barriers, e.g. Mzuzu a plantain cultivar is called by Nyakyusa Matoki/Itoki. This confiscate the naming and communication among researchers and farmers, there need to have a unified system of naming to facilitate communication.



Matooke (Nshakara and Ntobe)

Bananas have held a conspicuous connotation in Kagera and in the Bahaya cultural way of life for centuries, serving as concrete and symbolic mediums of existence (Maruo, 2002; Githinji, 2011). Githinji, (2008) and Rugalema, (1999), reported that Matooke to the Bahaya tribe are historical, cultural and staple food and they are regarded as an important subsistence food crop since 500 AD. These was reflected on its intensive cultivation happened in the region since 1300 AD (Schoenbrun, 1993; Rugalema, 1999). Banana farms and other farmland is generally inherited through kinship, often together with other properties including livestock or grown trees (Maruo, 2002). Matooke are the preferred banana by many tribes in Africa's Great Lakes region including the Bahaya of Kagera Tanzania. The crop was cultivated primarily for cultural purposes before colonial era and later as cash crop during the German colonial era, which is an important source of cash, wealth and class distinction in Buhaya (Tibaijuka, 1997; Rugalema 1999). The introduction of agricultural alternatives, specifically coffee has affected some cultural perceptions and practices in this banana based economy (Githinji, 2011). In one side coffee crop created a boon for many Bahaya in terms of economy, to the other side it led to bitter, ironic situations whereby people were forced to grow many coffee trees in their sacred kibanja which competed with bananas (Githinji, 2011).

Nshakara and Ntobe are variety of Matooke which are among the widely grown throughout the ECA region and under the commonly known group of East Africa Highland Bnanana (Perrier et al, 2018; Kimunye et al., 2021). The east African highland bananas include a genetically uniform triploid (AAA) group of cooking banana belonging to the 'Mutika-Lujugira' subgroup, called Matooke bananas. These bananas are a product of hybridization between *Musa acuminata* ssp. *zebrina* and spp. *banksii*, with a contribution from *M. schizocarpa* (Bakry et al., 2009). Nshakara .it has blackish pseudo-stern with bunch of many hands which are not as compact as Ntobe, the fingers are characteristically long. Ntobe has a light green pseudo-stem of 2.to 2.5 m with very compact type of bunch, the fingers are short compared to the Nshakara.



Nshakala; Photo
by Ashiraf M.



Nshakala; Photo
by Ashiraf M.



Ntobe; Photo
by Ashiraf M.

The root or ekisibo of Bahaya culture is the banana, it forms the cultural core and traditional food staple that characteristically symbolize the socio-cultural entity of the Bahaya (Githinji, 2011). The named Matooke varieties above and other banana are currently threatened by being highly susceptible to Bacterial wilt disease caused by *Xanthomonas campestris* pv. *Musacerum*, black sigatoka disease caused by *Pseudocercospora fijiensis*, weevil *Cosmopolites sordidus* and nematode like *Rhodophilus similis* the commonly and widely distributed nematode in East Africa. Another very important disease challenge these banana is Armillaria corm rot which is rampaged as the result of poor soil fertility in the region. Thus what threatens the banana threatens the Bahaya people, so the declining banana production equates to the loss of the Bahaya socio-culture (Githinji, 2011).

Challenges facing these banana in general

With experiences and observations from authors and information shared from different researchers, farmers and extension officers, named the challenges facing banana that are regarded as gold of some tribes beside the specific one are;

1. Lack of research priority and objective specificity, research currently focuses more on pest/disease resistance, yield and soil fertility for food sufficiency. Most varieties which produces more yields are either the hybrids or introduced cultivars, which in most cases are not as good as the preferred local cultivars. The objective of economic improvement to small holder farmer will never be achieved unless an inclusion approach to be undertaken. This calls for need to revitalize these local preferred varieties which were good source of income in the past. The issue of Fund and research should focus on the important banana varieties and specific varieties that focus on improving income generation in the community. Training and involvement of farmers in banana breeding research to help develop varieties that can replace the gold varieties of tribes is very important. Research specific for varieties like Sukari Ndizi, Mzuzu, Ndyali, Nshakara and Ntobe. Research on Mchare is ongoing in Arusha-Tanzania by International Institute of Tropical Agriculture.
2. Researchers and Breeders normally center their objectives on breeding hybrids that have improved resistance and agronomic characteristics, with less consideration the user's preferences (Bechoff et al., 2018) earlier on in the breeding cycle. End-user preferences are often captured at the end of the breeding cycle when varieties have already been developed and feedback might be too late (Akankwasa et al., 2020). There is a need to re-organize the research approach ensure there proper participation of consumers and market dealers from the initial stage of the research for cultivar generation.
3. Climate change, includes moisture/rainfall, temperature and sun-light, among these moisture/water is reported to be the most limiting non-biological factor affecting banana production (Turner, 1995). Tanzania banana farming is predominated by small holder famers who depend on rain-fed agriculture. Rainfall have been erratic and unpredictable in recent year as result of climate change impact. Climate change has caused unpredictable or irregular rainfall patterns (below, average or high) due these, there is accelerated poor performance of banana in many areas (Nyombi, 2013; Ndamani and Watanabe, 2013; Van Asten et al., 2011). Water stress/drought triggers signals from the roots to the leaves, which induce closure of stomata, allowing the banana to remain highly hydrated, but reducing carbon assimilation and therefore yield (Turner et al., 2007).
4. Soil fertility, nitrogen (N), phosphorus (P), potassium (K) are named to be very important nutrients for banana production (Weinert and Simpson, 2016; Guimarães et al., 2020). Banana plants have a relatively high nutrient demand, compared to other crops, so need high amount of K and N in banana orchards to replenish the nutrients lost (Guimarães et al., 2020). Many of the agricultural soils are degraded due to poor management and natural disasters which led to low fertility (Guimarães et al., 2020). Low soil fertility is among the major constraints to optimum banana growth and performance (Weinert and Simpson, 2016; Haifa-Pioneering Future). Farmers must have fully knowledge of nutrient problem in order to arrive at the right decisions regarding the kind and rates of fertilizers to be applied (Haifa-Pioneering Future). This is different from what some banana farmers in Tanzania perceive fertility and use of fertilizers in banana production. Some do believe fertilizers being a source of soil fertility destruction in their soils. Therefore there are need for the extension section to increase the efforts of dealing with farmers so as to make them knowledgeable.
5. Lack of organized local and international markets, challenges associated with marketing including low prices for the produce, high taxes especially for traders who transport bananas to towns, high costs of transport, variations in price depending on seasonality, poor road networks, poor quality products, internal competition among farmers and middle men who take half of the profits and leave the farmer with very low prices. Inexistence of regulatory organizations for non-traditional crops to facilitate regulation of the industry, as it is for primary commodities that have crop boards, have resulted in poorly coordinated and weak marketing systems (HODECT, 2010). Limited timely and robust domestic market information service is a constraint to efficient marketing of horticultural crops (HODECT, 2010).
6. Challenge related to characterizing of musa genetic resources, there have been a lot of confusion grouping musa genotypes worldwide. Proper characterization can contribution to determine the extent of genetic divergence across species and cultivar groups, defining the proper germplasm groupings, identifying useful sources of variation for further genetic enhancement, this will eliminating synonyms which are the great source of confusion (Ortiz and Swennen, 2014).

7. Lack of common recognized names among banana and plantain varieties, another point is that the musa cultivars are usually known under a multitude of vernacular names, reflecting the linguistic diversity rather than the musa diversity in a given area. This makes the collection and identification of plantain cultivars very difficult and not only presents an obstacle in the communication and exchange of material between researchers, but also makes the maintenance of collections very costly in terms of space, time and money. Considering the fact that plantain is not indigenous to Africa, its cultivars and their names in the various areas and languages are either obtained from elsewhere (spread of crop and cultivars, borrowing of names) or came into existence locally (mutations of plants, innovations of names).
8. Poor coordination among Stake-Holders, the Government, Non-Government, Research and Farmers. It is reported that the different components of the horticulture value chain including banana have very weak backwards and forwards linkages in Tanzania (HODECT, 2010). This makes the sector performs poorly in terms of production and marketing of products due to poor involvement of all stake holders.
9. Lack of enough capital to establish and maintain banana farms, Lack of access to finance has been identified by the World Bank index 2010 as the second most limiting factor for investing in Tanzania (HODECT, 2010). The provision of credit to private sector is 8% of the GDP and that 89% of Tanzanians have never held a bank account rendering more problems in accessing loans for business investment. Long term financing is highly needed for the horticulture industry as the current commercial bank rates and short term loans are not attractive for horticulture investment. This makes many farmers not able to handle many matters related to production and marketing of banana e.g. inputs, field management of the crops, transportation cost to markets etc.
10. Perishability nature of banana, lack of technology to store excess bananas so that they can be used during the time of scarcity. m. During the rainy season in November to March, bananas are in plenty, ripen and are exposed to waste. The consumers and buyers offer very low prices due to high supply of banana in the market. Yet in the months of April to August when it is too cold bananas are very scarce, the prices are high but farmers have no bananas to sell. In the similar months the community experiences scarcity of food. Access to post-harvest management facilities is almost non-existent for the majority of fruit & vegetable growers. Lack of storage facilities and cooled trucks contribute to large post-harvest losses that are reported for the horticultural sector (Rikken, 2015).
11. Limited utilization of banana and their products is limiting the exhaustion of benefit farmers could get from growing banana. Currently banana and its products are used commonly for food, brewing, rituals, animal feed, thatching materials. Other uses farmers could benefit from growing banana which have not been in use include hair plaiting materials, ceiling boards, mats, boxes, bags, clothes, male buds as food etc. such expanded use could increase the possibility of increasing benefit to farmers.
12. Lack of productions and marketing data locally and nationally is enigma that hampers development of banana production and marketing plans in the country. It is reported by Match Marker Associate, (2017) and Fehr, (2010), that data on the quantities of fruits and vegetables produced in the United Republic of Tanzania (URT) is incomplete, old and in some cases, unreliable. This is largely due to the absence of official government authority or a unit at the Ministry, which is dedicated to the coordination of the production and marketing of horticultural crops. Available data is a result of segmented information collected from different places, at different levels by different agencies and for different purposes.
13. Banana production, pest management and postharvest activities requires skilled and competent human resource. It is reported that management techniques is a serious constriction to enhancing yield and market quality of horticulture export crops like banana in Tanzania, shortage of professionals in the banana industry hampers its development (HODECT, 2010).

2. CONCLUSION AND RECOMMENDATION

In Tanzania banana growing is rain-fed agriculture dominated by subsistence farming that is characterized by the inevitable need to avoid risk at any cost. This is aggravated by negative experiences from technical interventions by government and private actors, poor cooperative systems, low education and the lack of skills. The prospected increasing banana prices due to urbanization and development of good infrastructure are drivers to increase demand for bananas in future to feed the increasing population. For Small holder farmers to increase their incomes, there are need for renaissance of support from Government, non-Government and other agricultural organizations to improve/increase their participation on current on-going research and production endeavors. The support can be in form of farmer subsidies on agricultural inputs, trainings,

on-farm demonstrations support on improved technologies. This observation is similar with what Akinyemi et al., (2017), that plantain and banana marketing is a profitable enterprise, but it is faced with the challenges of a poor transportation system, inability to access credit facilities, and perishability nature of the produce.

Recommendations.

1. We hereby recommend to all banana Stakeholders including Scientists in different disciplines, Political stakeholders, the Government and Non-Government Organizations, to come together and find out proper link between the breeding for market as key for improved income, so that contribution of these cultivars to rural poverty eradication can be revitalized.
2. We recommend more research especially ecological based studies to be done that can contribute to continuous survival of these banana varieties.
3. More research on market segmentation should be conducted to expand the use of banana and its products locally and internationally to enable farmers to accrue more benefit from the crop.
4. To remove ambiguity in naming, a proper classification system research is needed to help easy communication among stakeholders.
5. More researches are needed to help sustain these local cultivars which have proved to be gold of small holder farmers.

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