

# Assay on Vegetable Production and Marketing in Zanzaibar Island, Tanzania

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**Abstract**— Production of vegetables is a key factor in ensuring a continuous supply of raw materials for the development of agribusiness in horticulture. It is often argued that vegetable production in Zanzibar has reasonable advantages but the information regarding the commercial potential of local farmers in producing and retailing vegetables is limited. The present work has assessed the situation of vegetable production and marketing in Zanzibar. Both quantitative and qualitative methods were used to gather the necessary information, including interviewer administered questionnaires, informal group discussions, field observations and key informant interviews. The study revealed that about 59% of the farmer's population produces vegetables commercially, though only 30% to 35% of their yields are sold in market. It was also observed that out of 16 types of vegetables that were found to dominate the market, only 9 types were reproduced profitably by the local farmers. In general, almost all vegetables encountered were imported from regional countries to fill the market demand gaps. It is recommended that both or (the) government and non-government organization should extend their supports to local vegetable farmers, through (by providing them with) information, technology, production inputs and credit as a means of improving the quality and the quantity of their yield.

**Keywords**— Local farmers, Marketing, Production, Vegetables, Zanzibar.

## I. INTRODUCTION

Zanzibar is a small island with a population density of about 1.3 million with an annual growth rate of 2.8% (NPHC, 2012). Agriculture has continued to be a base to Zanzibar economy, providing food, and accounting for 31% of GDP, 70% for export and 70% of employment opportunities of the population principally in rural areas (OCGS, 2014). Agriculture sector however faces a number of challenges, among others low productivity, seasonality, small plots, traditional farming, lack of viewing farming as a business, pests and diseases, limited access to inputs, reliance on middlemen who push the farmers' profit down and unsuitability of growing many of the temperate crops in demand. The majority of farmers are subsistence, as most of them focus on growing enough food to feed themselves and their families.

Currently, it has been recognized that the market potential for vegetables in Zanzibar is absolutely high due to the increase in demand for vegetables through tourism sector; which accounts for almost 50% of the GDP (OCGS, 2014). Along with this motive are rapid increase in population and changing food pattern of the population in Zanzibar (Laurence, 2000). Tourism has become the major industry in the last 20 years, but Zanzibar farmers are scarcely benefitting from the estimated over 300,000 tourists that visit the island each year (OCGS 2014). About 80 % of the fresh vegetables consumed in the islands or supplied to the hotel industry are not from the island, the majority are imported from Tanzania mainland, Kenya and South Africa to meet the market needs (ITDP, 2002, Thembi, 2011), despite the fact that such vegetables could be produced profitably in the islands. The present study was aimed to assess the status of vegetable production and marketing from local vegetable farmers in Zanzibar.

## II. MATERIALS AND METHODS

### 2.1 Study Area

Zanzibar is located in the Indian Ocean between latitude 04°50' - 06°30'S and longitude 39°10' - 39°50'E and about 35 km off the northern coast of Tanzania, East Africa. Zanzibar has two major Island of Unguja (with an area of 1,554 km<sup>2</sup>) and Pemba (with an area of 990 km<sup>2</sup>). The climate of Zanzibar is warm and humid influenced by peripheral thicket/forest scrub and tropical climate with bimodal rainfall pattern, the long rain season (Masika) occurs from March to May and the short rain (vuli) from October to November. The hot season occurs during the NE monsoon period (Kaskazi) between December and February and a relatively cool dry season (Kipupwe) occurs between June and September. The average rainfall varies between 1000mm to 2500mm annually while temperature ranges between 17°C and 40°C. During the study period from July 2011 to June 2012, the annual mean air temperature was 27.3°C and the total rainfall was 1398 mm. There are two types of soil in Zanzibar; deep soils which occupy about 45% (74,000 ha) and 85% (94,633 ha) of the total land area of Unguja and

Pemba respectively. Coral rag soil account for 55% (90,458 ha) and 15% (14,195 ha) of the total area of Unguja and Pemba respectively.

The study was conducted from June to September 2011 and involved nine (9) villages from three regions of Unguja Island, namely Fuoni, Kisauni and Kombeni from West, Mahonda, Kinduni and Bumbwini from North and Kitogani, Muyuni and Makunduchi from South region, which are experienced in vegetable production and capable of supplying products in domestic market.

## 2.2 Data collection and analysis

The study integrated both qualitative and quantitative instrumentation, with interview administered questionnaire, informal group discussion, field observation and key informant semi structured interviews. A total of 45 vegetable farmers, 5 farmers from each village were interviewed, and four (4) small vegetable farmers associations were engaged in discussion. On Meta level, eighteen (18) interviews were conducted with key informants such as Subject matter specialist of vegetable production in each region, vegetable wholesalers and vegetables retailers to capture a detailed picture of the business practices in Zanzibar. The conducted survey covered farmer socioeconomic status, and vegetables production and marketing. The collected data were coded, compiled, tabulated and analyzed in accordance with the objectives of the study. The SPSS-package was used to perform the data analysis; Statistical measures such as percentage distribution, range and average were used to describe the extent of vegetable production and marketing program.

## III. RESULT AND DISCUSSION

### 3.1 Characteristics of Vegetables Farmers

The results show the heterogeneity of the producers in their socio-characteristics (Table 1). Almost all interviewed farmers belong to the active age groups ranging between 18 to 60 years. The highest percentage was the age group of 20 – 45 years which were mostly women 68%. The observation indicates the predominance of women (74%) in vegetable production activities in all regions.

**TABLE 1**  
**SOCIO-ECONOMIC CHARACTERISTICS OF SURVEYED POPULATION**

Characteristics	Region			Average (%)		
	West	South	North			
Gender	men	30%	23%	25%	26	
	women	70%	77%	75%	74	
Age	< 20	6%	4%	2%	4	
	20 – 45	78%	83%	91%	84	
	> 45	16%	13%	7%	12	
Occupation	Totally involving in farming	94%	80%	89%	88	
	Depend on other sources of income	6%	20%	11%	12	
Literacy	Read and write	Can	98%	98%	99%	98
		Can not	2%	2%	1%	2
	Farming skills	strong	92%	90%	94%	92
		weak	8%	10%	6%	8

Income may be defined as the total money value of the services received by an individual from all sources (Ahmad *et al.*, 2007). Table 1 represents the occupational distribution of the farmers sample respondents during our survey. The result shows that 88% of the respondents depend on vegetable production as principal source of their income and 12 % were involved in other miscellaneous occupations to add on their lively income. The observation discovered that, the vegetable production activities in three regions are carried out mainly by farmers who do not have a salary or regular employment.

Education is one of the most important factors in acceptance, rejection, adoption and dissemination of useful information to other fellows for their benefits [Ahmad *et al.*, 2007] the data in table 1 show that almost all of the farmers from all regions were literary; 98% (in terms of people's ability to read and write) and only 8% were weak in farming skills. Between the three regions, Northern part has high literacy rate compare to the rest. Earlier studies have shown that, education has a significant effect on farmer's behavior towards adoption of improved agricultural practices. (Asfaw and Admassie, 2004; Ahmad *et al.*, 2007).

Correlation studies on personal characteristics of vegetable farmers, particularly women have been reported from different works. In study made by Islam *et al.*, (2010) stated that, the age in vegetables cultivation had insignificant association with knowledge on vegetable production however education and income from vegetable cultivation were significantly associated with the farmer's knowledge on vegetable production. Farouque and Anwar (1998) reported that, the female education and knowledge of farming, hobby, extension contact and attitude toward technology has positive significant relationships with their selected self-employment activities which include vegetable production. Though according to Islam *et al.*, (1996) conclude that, education, mass media exposure, contact with extension agent, women respondent attitude and their husbands attitude were found to be significantly associated with women participation in vegetable production women activities.

### 3.2 Vegetable Production

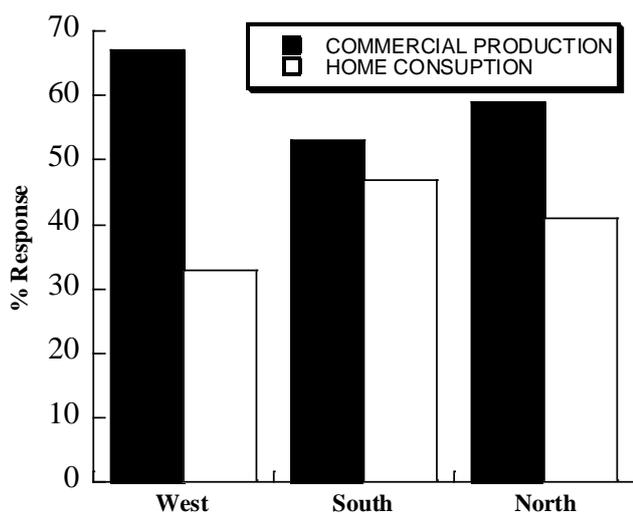
Vegetable production is an important activity among farmers in the three regions. As it's caught from them, recently vegetables have gained in relative importance and have particularly replaced other staple crops. Through interviews and discussions several reasons have been pointed out as presented in table 2. With the highest percentage of occurrence lies on the motive that the vegetables are cash crops (88%), this implies that the involvement of many farmers in vegetable production was for financial support to supplement the family income.

**TABLE 2**  
**IDENTIFIED REASONS FOR VEGETABLE PRODUCTION BY FARMERS, 2011**

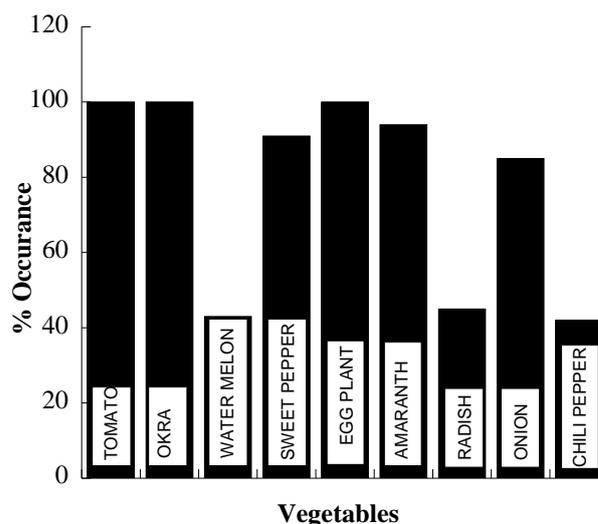
Reasons	Frequency	Percentage
Soil and climate are suitable for them to grow	24	60
Cash crops	35	83
Production is more profitable and less risky	29	73
Have relatively short production cycle	33	83
Others	12	30

The results of vegetable production and contribution of the three regions to the total vegetable market demonstrated that about 47% of the total vegetable products come from western region, where by Southern region and Northern region contribute to about 23% and 30% of the products in total vegetable market respectively.

Several ground vegetables, leafy and fruit vegetables were found to dominate the main vegetable markets at Darajani, Mwanakwerekwe and Mombasa. However, only 9 types of vegetables were found to match surveyed farmers plots (Figure2), notably; Eggplant, Tomato, Okra, Amaranth, Sweet Pepper, Anion, Radish, Watermelon, and Chili Pepper. Out of all types, the first 6 vegetable were found to have high market demand and produce profitably by the local farmers.



**FIGURE 1: PERCENTAGE CONTRIBUTION OF THE THREE REGIONS IN VEGETABLE MARKET.**



**FIGURE 2: VEGETABLE WHICH ARE PRODUCED PROFITABLY BY LOCAL FARMERS AND THEIR PERCENTAGE OCCURRENCES**

Among the three regions, West region produce much of the mention vegetables except water melon which was only produced from Northern region. Vegetables like Chill pepper and Radish were merely produced from south and west regions (Pers. Observation). Further analysis confirms that the Southern region is in the least position in vegetable productions, thus has less contribution to the total vegetable markets. This is due to for the poor soil fertility in the southern part of the island, which hinder the vegetable production activities of the farmers from the south region.

### 3.2.1 Constraints in vegetable production

Constraints in vegetable production were identified from the opinions of farmers in the agribusiness chain (table 3), among those are Inability of land expansion for vegetables productions (62%), less access to inputs (58%), pests and disease (53%), and lack of access to marketing (45%).

### 3.3 Vegetables Marketing

It is not enough just to produce vegetables; it must be produced efficiently and marketed successfully. About 98% the farmer's products were sold in the market. Among those, 85% sold to wholesalers, 15% to retailers. The prices are often dictated by the whole sale buyers (80%) and farmers (20%). However, sometimes the farmers can negotiate with whole sale buyers and a compromise is reached between two parties where farmers' share can reach up to 30%.

In term of vegetable supply, 67 % of the dealer respondents were retailers and 33% whole salers. It was noted that 85% of the retailer's supply came from wholesalers, while a few (15%) get it directly from the farmers. The Wholesalers on the other hand, get their supply from the farmers. Figure 4 presents the marketing channels involved in vegetable marketing in Zanzibar.

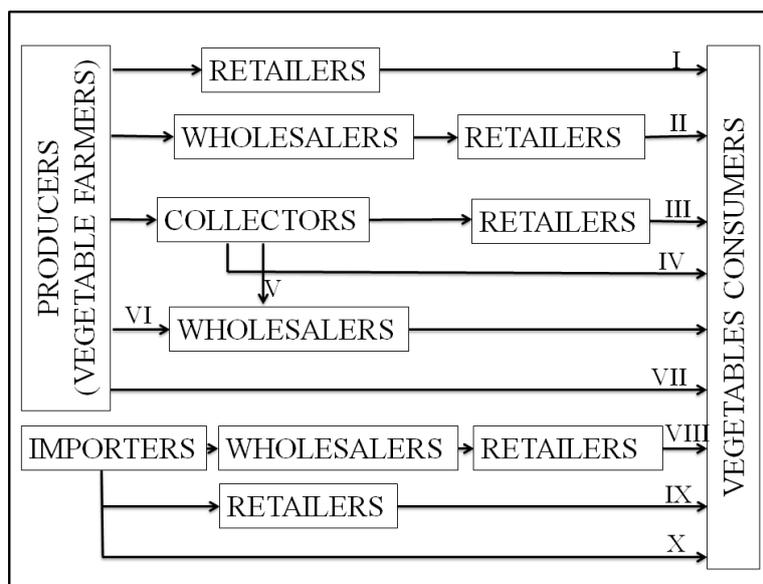


FIGURE 4: SCHEMATIC OF VEGETABLE MARKETING CHANNELS IN ZANZIBAR

Generally, the diverse vegetable distribution channels were witnessed through the survey, including: markets, shops, hawkers of which market is the most popular distribution type. Along with the market system, NGOs like UMWAMWEMA and MZIWATA have been developed to create a network of green vegetable supply to meet consumption needs as well as to benefit the producers (vegetable farmers). It has been testified that the channel IV (25%) and VII (55%), are the most beneficial for local farmers, as they have a direct connection to consumers most of which were hotels.

#### 3.3.1 Constraints in vegetable marketing

In general, the local vegetable growers are not in a good position to sell their products. The major problem in selling vegetable revolves around the weak leverage to negotiate prices especially with private traders (86%), the seasonality of vegetable supply (76 %) and the poor quality of their products (65%) which value the imported vegetables over the local products. The absence of the market information system, produce a severe effects on vegetable farmer to the sense that many vegetable farmers in an area tend to produce the same crops if they were previously profitable, causing a glut. In addition, the lack of capacity in post-harvest handling or storage implies that most vegetable farmers must sell their products in short

period of time, where most of the time compelled to sell at low prices. In view of the practical absence of primary post-harvest handling facilities at the village level, small-scale vegetable farmers are highly dependent on seasonal marketing operations, and local consumers' preference.

A successful commercial vegetable production is a demanding task that requires a combination of production and marketing skills from the vegetables growers. This is a consequence of the special attributes of fresh produce [Coolong *et al.*, 2010]. For instance, the perishability of fresh vegetables given to fewer storage opportunities compared to other agronomic crops (Vassalos, 2013). As a result, vegetable growers are compelled to accept the offered price close to, or during, their harvesting period. Furthermore, traditional risk mitigation options (including future markets) do not exist for fresh vegetables. Thus, growers are more vulnerable to market fluctuations (Ligon, 2001; Cook, 2011). Finally, growers need to operate in a changing market environment with greater demand for more varieties and quality (Dimitriet *al.*, 2003).

**TABLE 3**  
**MAJOR CONSTRAINTS IN VEGETABLE PRODUCTION AND MARKETING**

Constrain	Frequency	Percentage
Land expansion	30	75
Production inputs	25	63
Pests and diseases	21	53
Unpredictable market	21	53
price negotiation	34	86
Seasonal vegetable production and supply	30	76
Quality of the products	26	65
Others	14	35

If the vegetable produced does not meet the required standards, then the grower has to sell at a lower price or not at all. At this point Market integration become important for farmers livelihood as it carries potential benefits for actors involved. Ideally, farmers should have certain well developed relationships with dynamic market agents. In this way they can access agricultural inputs easily and sell their products for a suitable price while other stakeholders can also get benefits from their service providing or trading process. Also, this interaction can be a bridge which connects from domestic agricultural products to industrial products for supplying the nation to world's demand (Ahmed, 2006; Haggblade *et al.*, 2007; Berdegué *et al.*, 2008).

#### IV. SUMMARY AND CONCLUSION

Growing vegetables for supplementing diets as well as income is an important activity that vegetable farmers from Zanzibar perform to play their part in agricultural production and for country development. However, the overall contributions of local farmers to the vegetables production pattern seemed to be insignificant (<25%), so far all vegetables were imported from regional countries to fill the local market demand.

To ensure that, the existing market gaps of vegetables are covered by local vegetable farmers, their outstanding and genuine constraints associated with production and marketing of vegetables must be alleviated, thus the following are very much recommended:

- Both Government and non-government organization should extend their supports to local vegetables farmers, by providing them with information, technology, production inputs and credit as a means of improving the quality and quantity of their yield. The vegetable farmers need a more effective and better-targeted agricultural extension service.
- The existing overall marketing channels should be updated by reducing number of intermediaries, thus reducing the gap between the unit income of the farmers and the market price
- Marketing contracts should be adopted, particularly with collectors (NGOs, major buyer's like hotels) to have secured markets and to maintain the future relationships with local vegetable farmers.
- Import restrictions of vegetables which can be produced locally should be recognized to create more opportunity to the local vegetable farmers.

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