



Exploring the Role of Universities in Enhancing Food Security and Food Safety in Kenya

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Abstract

The number of undernourished people in agriculture and livestock reliant communities in Kenya is on the rise. Hunger has increased not just in traditional arid and semi-arid lands (ASALs), but also in agriculturally productive regions. The country has witnessed periodic cases of hunger and malnutrition because of drought and famine. Despite the government's hatched series of new strategies and establishment of universities in rural areas, the universities have not adequately succeeded in addressing specialised gaps in host regions. However, the higher education reforms have increased higher education access and eased admission crisis that plagued the country in the past, but is struggling to address the specific needs of host communities. The study explored the role of universities in increasing food security and food safety in Kenya. The study evaluated the use of teaching, research and community mobilization, in promoting food security and food safety. It further highlights the course of food insecurity in some regions of Kenya despite abundance in food production in other regions. The study was purely qualitative. Data was obtained through desktop research. Collected data was analysed through content analysis. Analysed data is presented in tables and figures. Conclusions and recommendation for policy are made. The expected outcome of the study indicate that: there are specific factors promoting food security and food safety; that a substantial unmet need persists in cultivation; and that more is required in making food security a reality. It is hoped that the results of the study will improve our understanding on food security and food safety and support policy-makers in designing better future policies.

Keywords: Food Security Food safety Rural Research Teaching Community

1. Introduction

The pursuit of food security and food safety is inherent to human existence. The Committee on World Food Security (CFS) notes that food security exists when all people, at all times, have physical, social and economic access to sufficient, safe and nutritious food that meets their dietary needs and food preferences for an active and healthy life (CFS, 2009). The four pillars of food security are availability, access, utilization and stability. The nutritional dimension is integral to the concept of food security.

Safe food on the other hand is that which if properly handled at all steps of production through consumption, is reliably unlikely to cause illness or injury (Schmidt and Rodrick, 2003). It is the practice of ensuring that foods cause no harm to the consumer, it includes protection of the food supply from harmful contamination; prevention of the development and spread of harmful contamination and effective removal of contamination and contaminants. Crops may be destroyed in the fields, animals may be drowned, food supply lines may become disrupted, and people may be forced to flee to areas where they have no access to food (Wisner and Adams, 2003). Moreover, the safety of whatever food there is may be affected, resulting in a greater risk of epidemics of foodborne disease (p. 48).

The ability of agriculture to support growing populations is of great concern globally (Rosegrant and Cline, 2004). This is because crop yield growth has slowed in much of the world because of declining investments in agricultural research, irrigation, and rural infrastructure and increasing water scarcity. In addition, new challenges to food security are posed by climate change and the morbidity and mortality of human immunodeficiency virus/acquired immunodeficiency syndrome (HIV/AIDS). The United Nations (UN), Sustainable Development Goals (SDGs) has eradication of poverty, hunger, good health and wellbeing, and reduced inequalities as part of the 17 goals (United Nations, 2017).

According to the Alliance for a Green Revolution in Africa (AGRA), though Africa has the resource base for farming, and a rising demand for food, it continues to become more dependent on food imports (AGRA, 2017). According to Food and Agriculture Organization (FAO), in sub-Saharan Africa (SSA), the prevalence of undernourishment in all regions of the continent has risen up (FAO, 2017).

Kenya is considered a food insecure country. Over half of the population lack access to adequate food. The country's agricultural sector, the eighth largest in Africa by volume, has struggled to keep pace with consumption since the late 1990s and agricultural consumption in Kenya will exceed production by nearly 20 million metric tons by 2040 (wellborn, 2018). This means that imports would have to meet roughly 25% of agricultural demand.

The number of undernourished people in agriculture and livestock reliant communities in Kenya is on the rise. Hunger has increased not just in traditional ASALs, but also in agriculturally productive regions. The country has witnessed periodic cases of hunger and malnutrition because of drought and famine. Despite the government's hatched series of new strategies and establishment of universities in rural areas, the universities have not adequately succeeded in addressing specialised gaps in host regions. However, the higher education reforms have increased higher education access and eased admission crisis that plagued the country in the past, but is struggling to address the specific needs of host communities. This paper therefore explores the role of institutions of higher learning in enhancing food security and food safety.

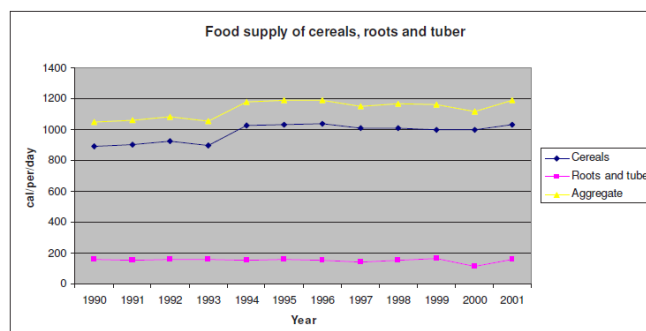
2. Food Security and Food Safety in Kenya

The four dimensions of food security, food availability, food accessibility, stability, and utilization/nutrition determines vulnerability to hunger in a community (Republic of Kenya, 2009). Food can be made available through own production, purchases, aid or gifts. The average food availability among African countries, Kenya included reveals that in one third of African countries, the average daily caloric intake availability is below the recommended level of 2100 Kilocalories (Kcal).

The self-sufficiency in food, production does not automatically lead to food security. Food accessibility and stability is as important. Food in Kenya is mostly produced in rural areas. Own production of food stands at 2% and 70% in urban and rural areas respectively (*ibid*). Supply of food to demand regions is affected by poor transport, high fuel prices and market infrastructure. As a result, food either does not reach those who need it most or reaches them at excessively high prices. In addition, conflicts have constrained the flow of food leading to insufficiency even for those who could afford to purchase.

Incidences of malnutrition and stunted growth are as a result of inadequate food utilization and nutrition. The main reason for malnutrition in Africa is low production of food in relation to population growth. Furthermore, priority has been put on development of cereals and pulses/legumes (see figure 1) leaving behind the root and tuber crops, which can survive harsh weather conditions. Per capita food availability has been declining in Kenya. This is largely because of the reduction in maize production. Production of the staple has reduced due to inappropriate macroeconomic policies, especially an overvalued exchange rate, the ineffectiveness of agricultural support services, including parastatal marketing and credit agencies resulting in much-delayed payments to farmers, limited availability of good

agricultural land and a slowdown in the flow of new technologies, extreme droughts and policy adjustments (Gitu, 2006).



Source: Gitu (2006)

Approximately 80 percent of the land area of Kenya is ASAL, and only 20 percent of the land is arable (Muleri, 2009). According to Society for International Development (SID), land is considered high potential or low potential in Kenya based on crop agriculture. As a result, ASALs are considered as low potential areas (SID, 2004). Pastoralism is the main form of production in the ASAL areas and cattle, both beef and dairy, are the most important livestock species (Gitu, 2006). Other livestock subsectors in the country include sheep, goats, camel, poultry, piggery and bee keeping-apiculture (Republic of Kenya, 2010). In addition, aquaculture or fish farming is considered the fastest growing production subsector in the country due to the presence of a wide variety of water sources such as rivers, springs, dams, lakes, the Indian Ocean, agricultural land, swampy and marshy areas.

Traditional food crops such as beans, pigeon peas, cowpeas, dolichos, sweet potato, cassava, sorghum and millet are pivotal in ensuring self-sufficiency in food especially in ASALs that are characterized by recurrent drought, poor soils and general lack of resources for meaningful agricultural production (Karanja, *et. al.*, 2006). In addition to meeting the daily subsistence food requirement, these crops can be transformed into broad-based commodity for sustained food security, better nutrition and income generation (p. v). Challenges to food security include insecurity, communicable diseases, poor extension services, nomadism and poor infrastructure, high feed cost, heavy post-harvest losses and water pollution. Other bottlenecks to food security include farmers' inability to access research findings and illiteracy (Gitu, 2006).

3. Public-Private Partnerships

Food inadequacy is linked to poverty, population growth, poor distribution of rainfall, pest damage, high cost of production among others (Republic of Kenya, 2009). The United Nations Economic Commission (2017) reports that people living in rural areas are the most exposed to food insecurity in all countries. In this, article the role of public–private partnerships (PPPs) is presented as an effort to achieve food security. Due to limited government resources and expertise, innovative partnerships that bring together actors from business, government and civil society are increasingly being promoted as a mechanism for improving productivity and driving growth in the agriculture and food sectors around the world (FAO, 2016). The concept is referred to as PPPs. These initiatives are common in such sectors as infrastructure, health and education, but their application in the agriculture sector is relatively new (p. 3). PPS in agriculture are promoted to help modernize agricultural sector and contribute towards sustainable agricultural development (see WEF, 2011; WEF & McKinsey and Company, 2013 in *ibid*).

PPPs in Kenya are an evolving instrument with great potential to trigger development of agribusiness and drive growth in the agriculture sector (FAO, 2017). Moreover, agribusiness PPPs have been involved in the provision of inputs, value-addition through agro-processing, technology transfer through commercialization, contracting and warehousing. An essential component of the state's agriculture sector development strategy is to enhance the capacity of the private and public sectors in agriculture through supporting innovative private sector activities or public–private partnerships that promote market-driven production, processing and marketing initiatives (Republic of Kenya, 2010).

4. Universities and Food Security and Food Safety

PPPs have become policy tools for service provision, outsourcing, and privatization in many countries, especially in the Anglophone world (International Food Policy Research Institute, 2008). PPPs can take a variety of forms, as they are not limited to bilateral collaboration between a government agency and a private corporation (Ferroni and Castle, 2011). They can also include, for example, multi-partner structures that bring together private companies with entities such as non-governmental organizations (NGO), university research institutes and foundations. Kenyan institutions of higher learning form part of PPPs in various ways. The universities have repackaged curricula, research and extension services to meet the needs of farmers and other stakeholders in agriculture (Mungai, *et. al.*, 2016).

Research conducted by universities in food science and technology enhances food safety, reduces spoilage and develops healthier and more appealing foods that meet consumer expectation and export potential (Ojijo, 2009 in Oloo, 2010). The purpose of research in

universities is to among others produce knowledge to solve immediate problems in society by improving existing knowledge and making new discoveries (CPS, 2018). However, as is indicated in table 1, the criteria for funding higher leaning institutions in Kenya, favours the traditional national universities as compared to the recently established one most of which are located away from the capital. In addition, research in Kenyan is mainly social science based.

Government capitation in public universities has declined. About 80% of government capitation to public universities goes to pay emoluments leaving only 20% for operations and maintenance (Gudo, 2013). The funding given to universities is also inadequate and senior staff are held up with teaching load and administrative role at the expense of research (Muia and Oringo, 2016). In addition, there is lack of support for the graduate students in their research interests that could propel innovation (Drape, *et. al.*, 2016).

Table 1: Top 10 Nationwide- Most-Funded Universities

Name of University	All Government/ county & Institutional research funds(Mn of Ksh)	All Government/ county & Institutional research funds(% volume)	All Business, NGOs & other donors(Mn of Ksh)	All Business, NGOs & other donors(% volume)	All Research funds (Mn of Ksh)	All Research funds (% volume)
1. University of Nairobi	449.76	23.93%	88.19	7.62%	537.95	17.72%
2. Kenyatta University	361.47	19.23%	95.12	8.22%	456.59	15.04%
3. Moi University	237.84	12.65%	64.28	5.56%	302.12	9.95%
4. Jomo Kenyatta University of Agriculture & Technology	182.74	9.72%	53.75	4.65%	236.49	7.79%
5. Egerton University	78.65	4.18%	43.70	3.78%	122.35	4.03%
6. Maseno University	81.02	4.31%	27.01	2.33%	108.03	3.56%
7. Strathmore University	22.00	1.17%	78.80	6.81%	100.80	3.32%
8. Masinde Muliro University of Science & Technology	66.09	3.52%	24.48	2.12%	90.57	2.98%
9. Mount Kenya University	15.60	0.83%	71.00	6.14%	86.60	2.85%
10. Aga Khan University	10.00	0.53%	65.00	5.62%	75.00	2.47%
Totals	1505.17	80.08%	611.32	52.85%	2116.49	69.71%

Source: CPS. (2018).

The proportion of females’ enrolment in higher education remains relatively low compared to men (Ngome, 2003). Generally, transition from secondary to university education in Kenya remains low (World Bank, 2016). Higher education returns for women are significantly greater than for men in rural see table 2. Women are closes to agricultural production making 75%-89% of the labour force (Ahean, and Tempelman 2010). Their skills can be improved if they have access to the institutions of learning. Kenya’s economy has not been able to provide the necessary amount of employment and economic progress has primarily benefitted the older generation (Hall, 2017). In addition, young females in rural locations constitute the largest share of unemployed Kenyan youth.

Category	Completed primary	Completed secondary	TVET	University
National	7.7	23.4	23.6	25.1
Urban	9.3	34.4	26.2	34.8
Rural	7.8	21	22.4	14.2
All males	4.4	21.2	12.8	23.3
Urban males	6.1	25.6	17.9	30.7
Rural males	4.2	20.2	12.4	12.6
All females	13.2	36.3	43.5	62.5
Urban females	6.2	44.9	28	66
Rural females	16	30.3	51.5	18.6

Source: Kimanyu, *et. al.*, (2006) in World Bank (2016).

Conclusions and Recommendation

In conclusion, it is worth recalling a number of points about food security and safety in Kenya. Kenya is a food insecure country. Most of the land in the country is not arable. The movement away from traditional food crops (tubers and roots) in favour of cereals has made the situation worse. Dependence on government funding by the universities will continue to affect research output and other extension services given the continued decline in government capitation to the universities.

Universities need to diversify their sources of income. Emphasis should be placed in obtaining funds from the private sector unlike the current trend of reliance on government and student fees. State funding is on the decline while households cannot be relied upon to increase the amount of money paid through student fees. With proper funding, the universities will be able to conduct research on suitable crop and animal variety especially for the ASALs. More attention and research should be conducted on traditional food crops with the intention of encouraging their development and market. Research findings should be made available to the farmers through extension work and community mobilization.

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