COLONIALISM AND THE AGIKUYU WOMEN'S INDIGENOUS KNOWLEDGE SYSTEMS ON FOOD CROP PRODUCTION IN KIAMBU, KENYA, 1902-1963.

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A Research Thesis Submitted to the Graduate School in Partial Fulfillment of the Requirements for Award of Degree of Doctor of Philosophy in History of Chuka University.

CHUKA UNIVERSTY

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DECLARATION AND RECOMMENDATION

Declaration

This thesis is my original work and has not been presented for an award of any degree in this or any other University or institution.

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DEDICATION

This work is dedicated to my dear parents Mr. Francis Muraya and Mrs Felister Wairimu Muraya.

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ABSTRACT

The interaction between the European colonialist in Kenya and the Agikuyu people influenced the indigenous Knowledge systems related to food crop production. Particularly, the introduction colonial policies and practices undermined the vital role of the Agikuyu Women's Indigenous Knowledge Systems (AWIKS) on food crop production and instead they viewed them as uncivilized and backward. Therefore, the purpose of study was to analyze the implications of colonialism on the AWIKS on food crop production in Kiambu County from 1902 to 1963. The main objectives of the study were; to explore the Agikuyu women's indigenous knowledge systems on food crop production in pre-colonial Kiambu upto 1902, to examine the implications of European colonial policies and practices on the AWIKS on food crop production, and further to find out the effect of disregard of AWIKS on the availability of food in Kiambu. The study employed descriptive research design and it was also guided by the Neo-Marxist theory that looked at the relationship between women and the process of colonial capitalist development. The study was done in three sub-counties of Kiambu West, namely, Limuru, Lari and Kikuyu. The sample size was guided by the concept of data saturation in an interview based research. The main source of information was oral interviews, archival records analysis and secondary data. Oral interview data was analyzed using Statistical Package for Social Scientists (SPSS) and reported using basic simple descriptive statistics such as percentages, frequencies, and tables. The study established that in pre-colonial set up, the Agikuyu women of Southern Kikuyuland (present Kiambu County) commanded detailed indigenous knowledge on weather observation and prediction, quality seed selection, indigenous farming methods, harvesting, storage and preservation in order to ensure enough food crop production in the households. In addition, the European colonial undermined the AWIKS on food crop production during the establishment of commercial crop production, land alienation and forced labour policies. Sixty (88.2%) of the respondents mentioned that between 1902 and 1963 most of the Agikuyu people were moved from their indigenous land and were pushed to poor, marginal and unproductive reserve areas where they did not have enough experience and accumulated indigenous knowledge system of the new agro-ecosystem. In addition, 29 (42,6%) of the respondents felt that the Europeans neglected most of the drought tolerant food crops in favour of fast growing commercial crops. Women were also forced to provide cheap labour in the European plantations and projects, a move that led to neglect and undermining of AWIKS on food crop production. The study also found out that during the period of political instability food crop cultivation was very little and this led to marginalization of AWIKS on food crop production. The research concluded that the integration of the Agikuyu women in colonial policies and practices undermined, neglected and pushed to the periphery the important role of AWIKS on food crop production. Therefore, the integration of AWIKS and western scientific agricultural knowledge on food crop production could be an effective way of ensuring food security.

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ABBREVIATION AND ACCRONYMS

ASDSP	-Agricultural Sector Development Support Programme
AWIKS	- Agikuyu Women's Indigenous Knowledge Systems
AWSC	-African Women Studies Centre
BIEA	-British Institute in Eastern Africa
CMC	-Church Missionary Society
CSM	-Church of Scotland Mission
EAAHS	-East Africa Agriculture and Horticulture Society
EAMLS	- East Africa Millitary Labour Service
EARC	- East Africa Royal Commission
EATUC	-East Africa Trade Union Congress
FAO	-Food Agricultural Organization
FWCW	-First World Conference on Women
IBEAC	-Imperial British East Africa Company
IFAD	- International Fund for Agricultural Development
IK	-Indigenous Knowledge
IRAD	- Institute of Agricultural Research for Development
KCA	-Kikuyu Central Assocition
KAR	-King's Africa Rivals
KASU	-Kenya African Study Union
KAU	-Kenya African Union
KNA	-Kenya National Archives
KIK	-Kenya Indigenous Knowledge
KPHC	-Kenya Population and Housing Census
LVB	-Lake Victoria Basin
NCSTI	-National Commission for Science, Technology and Innovation
NITD	-Native Industrial Training Deport
SDG	- Sustainable Development Goals
SSA	- Sub-Saharan Africa
UN	-United Nations
UNEP	-United Nations Enviromental Programm
WAD	- Women and Development
WID	-Women in Development
WWI	- First World War

WW11	Second World War
HYV	High Yeilding Varieties

GLOSSARY

Agumba	Short forest dwellers (4 ft and 6 inch)
Asi or *Dorobo*	Maasai word living on hunting & gathering
Gitara	Wooden stand
Githaka	land
Riika (pl. Mariika	Age-set
Riiko	Hearth
Kahiu ka mengere	Men's cultivating knife
Munyago	Men's digging stick
Muhugu	*brachylaena hutchensis*
*Mutamaiy*u	*Olea europea ssp. africana*
Kuhoya mbura ya kimera	Religious ceremony to request for rain
Kuhuha	Winnowing
Mbari	Kineage
Mugomo	fig tree
Muturi	Blacksmith
Muthoni	In-law
Migaa	Acacia trees
Mwene Nyaga	Agikuyu God
Ng'aragu ya Thika	Famine of Thika
Ngerua	Old clay bellow nozzle
Nja	outside the homestead
Ngwatio system	Working together
Athomi	the educated
Muigwithania	Reconciler
Aregi/ Karing'a	those who refused to accept attack on Agikuyu cultural values
Muthirigu	Songs and dances were meant to condemn, ridicule and intimidate the Europeans
Mai ma nyoni	Birds droppings

CHAPTER ONE
INTRODUCTION

1.1 Background to the Study

Many traditional societies in various parts of the world engaged in various productive and reproductive activities through experimentation. For many years, traditional farmers managed the natural resources, they selected varieties of crops, used a variety of farming methods and livestock breeds to cope with the environmental conditions and meet diverse nutritional and social needs. They developed a set of interaction between indigenous people's socio-economic activities and ecosystem, which encouraged people to continuously rely upon nature for their livelihoods. These indigenous famers also developed Indigenous Knowledge (IK), which was guided by the local beliefs, customs and traditions. Therefore, IK comprises all local knowledge pertaining to a particular people within a territory, its nature and usefulness which has been transmitted from one generation to another (Daes, 1993).

The Indigenous Knowledge Systems (IKS) can be described as the unique skills; local information and understanding that were developed by a specific community. It is also referred to as the "traditional knowledge or local wisdom", "non-formal knowledge", or "traditional ecological knowledge" or "farmers knowledge" (Daes, 1993). It was purposely developed by a particular group of people from an in-depth understanding of their local environment, local experiments and innovation, including learning suitable knowledge from other communities. It encompassed the sophisticated collection of skills, innovations, practices, understandings and interpretations that guided traditional society in addressing local ecological limitations and maintaining a sustainable utilization and protection of natural resources (Brokensha & Warren, 1980). These included broad range of subject matter, for example, natural resources and environment, traditional agriculture, animal husbandry, medical knowledge and other aspects (Correa, 2001). The Indigenous knowledge systems were transmitted and renewed by each succeeding generation, ensuring the wellbeing of people by proving food security, environmental conservation, and early warning systems for disaster risk management (Mafogoya & Ajay, 2017).

The increasing importance of IKS in the contemporary society cannot be ignored. According to (UNEP 2008) indigenous knowledge related to agriculture and the environment was internationally recognized following the United Nations Conference on Environment and Development, which was held in Rio de Janeiro in June 1992. Futhermore, the UN declaration on the rights of indigenous people states that all peoples contribute to the diversity and richness of civilization and cultures, which constitute the common heritage of humankind (United Nations, 2014). This ensures people's right to remain distinct and to pursue their own priorities in economic, social and cultural development. Many countries, Kenya included, voted overwhelmingly in favour of the native people to have the right to protect natural resources, and to maintain their unique indigenous cultures and traditions. The UN was concerned that indigenous people have suffered from historical injustices as a result of colonization and dispossession of their lands and resources, thus preventing them from exercising their right to development in accordance to their own needs and interests (United Nations, 2014). This shows that the indigenous knowledge system has been recognized worldwide as necessary and as a human right and therefore its role in enhancing sustainable development should be recognized.

Every society has a history behind its knowledge resources which guided its development process. The indigenous skills and knowledge were vital and continue to be substantial aspects of the culture of any society (Brokensha & Warren, 1980). They acted as a community's protective mechanism against unexpected environmental and climate changes and it manifested community's resourcefulness. Famers used IKS as a key component in addressing the challenges of droughts and subsequently reduce their negative impacts (Chikare, 2018). They also functioned within the given socio-economic and spatial boundaries of the society and were used by its members to serve some purpose in relation to productive activity within the society (Bell, 1979). These unique methods and practices that were used by the traditional societies were well established and developed out of the complex traditional channels of information and exchange within the community (Wright, 1994).

Local communities and farmers in traditional Africa developed intricate systems of food production, processing, preservation and storage. These systems were expressed and transmitted through language, social organizations, ceremonial practices,

observations values, institutions and local laws (Kuakkanen, 2010). The knowledge held by indigenous men and women differed according to their customary responsibilities (IFAD, 2009). FAO also recognized the importance of women, men and youth as change agents in agricultural adaptation (FAO, 2017). Men and women often had different types of traditional knowledge related to their specific roles in food production and Agriculture. Women in most traditional societies were more responsible for the food crop production and ensuring sufficient food in their households (Ashley, 2000). In many parts of Africa, as similar to other indigenous societies around the world, it is women who were primarily responsible for food production, household management and nurture of children; as a result, they had more in depth knowledge and unique skills in food production practices. Women in most African farming traditions were the main custodians of seed diversity, which means selection, storing, breeding, enhancing, diversification, multiplying and exchanging seed, building on the knowledge they inherit from generations before them (Grey & Patel, 2015).

Yonah & Gaoshebe (2017) argued that African women used their IKS as an effective resource to raise agricultural productivity and in the life of rural people and therefore a critical analysis of the important of the IKS in agricultural production needs to be taken seriously by researchers, stakeholders and policymakers. On the same point, Ngenwi (2010) indicated that women make up almost 80% of the agricultural work force in the tropics and have increasingly been vulnerable to climate change and therefore they had to come up with unique agricultural skills in order to cope with climate change. Henning (2002) reported that in Mali, the rural women used indigenous knowledge to produce *Jatropha Curcas* or *physic nut* to produce oil as raw material and fuel. Traditionally the seeds were harvested by women and used for medical treatment and local soap production. This helped to empower women, alleviate poverty and ensured rural area of Mali had renewable energy. Similarly, Haile (2004) gave an example how women in Ethiopia played a significant role in using indigenous knowledge of an oxen-drawn plough to prepare land for farming.

Musalia (2010) observed that in the traditional Agikuyu community, food crop production was also gendered. On one hand women were responsible for seasonal foods crops *(irio cia Kimera)* such as millet, sorghum, legumes (beans, cowpeas,

green grams), vegetables, fruits and others which was labour intensive and required special skills while on the other hand, men cultivated certain perennial crops *(irio cia menja)* like bananas, sugarcane, yams and cassava, pumpkins, and gourds. According to Kenyatta (1965), there was a clear division of labor in such a way that men were allocated the role of clearing forest or bush and breaking land for planting uprooting the grain stalks after harvest and burning them to fertilize the soil, killing pests and collecting honey while women's role was selection of seeds, planting some food crops, weeding, harvesting, storing and preservation to ensure sufficient food supply households. These gendered roles and responsibilities determined decision-making, technology and tools, nature of knowledge, skills and practices in food crop production (Middleton, 1953).

This meant that within the traditional subsistence economy, women were basically responsible for intensive food crop farming and household activities which had to be performed daily or as seasonal routine. This heavy workload probably made the traditional Agikuyu women adapt to climate variability using indigenous knowledge and skills. They possibly developed extensive knowledge of their natural environment in predicting weather, interpreting the climate and weather change, knowledge in soil suitability and management, selection of quality seeds, proper methods of farming, crop protection and strategies of food crop storage, preservation and preparation. Therefore, they played an important role in managing natural resources for domestic food crop production, to improve their livelihoods and to develop their community.

However, colonialism specifically in Kenya led to different understanding of the values, roles and power dynamic involved in indigenous cultural practices. World history is full of examples on how some societies gradually expanded by exploiting and marginalizing the conquered territories, other people's indigenous culture and also their land and land use patterns. From ancient times, the Greeks and Romans to name just a few set up colonies in various parts of the world. Nevertheless, the modern European colonialism in the Americas, Australia, and parts of Asia and Africa had diverse impact on the indigenous systems (Mies, 1986; Eyong, 2017). For instance, European's colonization of Australia resulted in competition over land and resources and quickly led to exploitation, marginalization and in some cases the massacre of indigenous people. Therefore, there is need to reflect on how colonization

affected the decisions of the indigenous people in a way that, ironically, undermines the very freedom that they purport to pursue (Grey & Patel, 2015).

In America, the colonial experience was one of absorbing the British modes of capitalist economy, governance and culture. The development of British colonial capital accumulation and industrialization in America and Australia brought drastic changes that affected both men and women and it is linked with creation of social inequality including gender inequality (Reynolds, 1982). Moreover, in India the British colonial government made institutional changes in agriculture, education and Industries. For example, indigenous agriculture was transformed through the establishment of new systems of private ownership of property which was based on western capitalist ideology. This change offered some stimulus to increased agricultural output but at the same time the Indian population remained subject to recurrent famine and epidemics in 1920's and 1930's partly due to war conditions, increased population and overemphasis on cash crop production (Bhatia, 1973).

According to Zeleza (1993), most of the European colonizers and western historiographers of the nineteenth and early twentieth Century described African indigenous practices and knowledge as "simple", "primitive", and "outdated". However, this was a wrong assumption, which may have been guided by the European modernization ideology that was meant to draw Africans into the international capitalism. African indigenous knowledge system had never been "simple" or "static", but had been evolving slowly in response to ecological changes. Hopkins gives an emphasis to this point by arguing that the agricultural history of the pre-colonial period is a story of innovation rather than of stagnation (Hopkins, 1973). However, drastic changes on the indigenous subsistence food crop production practices became evident when the European colonial government attempted to promote and legalize European acquisition of Africa and with the establishment of colonial administration.

Although African women were the major food producers in their pre-colonial communities, their indigenous knowledge systems were not given due consideration during the implementation of the Europeans colonial policies and it was treated as useless and primitive, and was pushed to the periphery in the process of

modernization. It is important to note that both African men and women's unique indigenous knowledge was highly disregarded by the European colonialists. However, Staudt (1993) observed that land alienation and labour policy during the colonial period excluded women from access to main production forces and also caused heavy burdens on their labour, which may have had negative impact on food crops production and availability of food in the households.

Mies (1986) states that the colonial government was biased against Africa women and had a preconceived idea of the role the African should play in the economic development of the county. The European perception of the role of women was guided by the 19th century European Victorian ideology of separate spheres that presented women as good mothers, wife and a house maker. The ideology stated that the only proper place for a respectable woman was in the home undertaking domestic work, nurturing and providing comfort to her husband and children, supervising servants, making and mending cloths and caring for the elderly and the sick (Engels, 1972). This assumption compromised women's capacity to participate in the public sphere and therefore the capitalist competition, wage labour, commercial crop production and politics was continuously viewed as a difficult sphere preserved exclusively for men (Turner & Katherine, 2006). European colonialists equated men or male with "breadwinner" and as a result introduced to them western technologies which enabled them to be recruited for wage labor in mines, factories, plantations and towns which often took them off their traditional roles.

According to Eyong (2017), colonialism was largely responsible for destroying African traditional cultural practices. In Nigeria for example, indigenous food production and distribution suffered set-back during colonial period, the colonialists did not give food production the much needed attention which resulted to drought and famine in the Southern Zaria District and many other parts of Nigeria. The colonialist over used the soil by making the Nigerians people to produce for commercial purposes and the production of cash crops to pay taxes imposed by the colonialists (Yahaya, 2016). In Kenya, this major pressure on African's indigenous practices was probably felt when the colonialists introduced several ordinances and socio-economic policies. These included the Land order-in Council of 1901 and the Crown Lands

Ordinance of 1902, which had far reaching implications on the Agikuyu women subsistence agriculture. These orders gave the colonial government jurisdiction over all lands previously occupied by Africans. Specifically, the Crown Lands Ordinance of 1902 gave the commissioner power to lease or sell land to settlers and to define the conditions of land alienation (Tignor, 1979; Sorrenson, 1967).

The Europeans did not take enough time to clearly understand the essence of the Agikuyu Women Indigenous Knowledge Systems (AWIKS) on food crop production, its role and values in ensuring sufficient food supply in Kiambu area. Record shows that during the colonial period there was a series of food shortage and famine that was experienced in Kiambu area. For example, in 1930's, 1940's and 1950's Kiambu County was hit by acute food shortages the worst being cassava famine (*Ng'aragu ya Mianga)* of early 1940'S where the government was giving people in the reserves the indigenous Cassava crop flour to curb food shortage (Throup, 1988). Muchoki (1988) reported that the period between 1912 and 1913, the Agikuyu women took heavier men's agricultural responsibility and that the colonial government failed to recognize African agriculture in Kiambu. This deteriorated the Agikuyu agricultural production since they did not get keen agricultural advice or capital for food crop production from agricultural department. Furthermore, Mwangi (2014) argued that colonialism through land alienation and individualized land tenure that was founded on British policies in Kikuyuland led to land degradation, whichy played a significant role in marginalizing the African indigenous knowledge on land and soil conservation. Darko (1989) says that the present food crisis in Africa has its roots in the historical relationship between Africans and the western World and the only solution is for Africans themselves to integrated their their indigenous science and technology with western agricultural technology.

Indeed the effect of colonialism on the indigenous food production and consequent food availability in Kiambu was not unique to Kenya. Bryceson (1980) stated that the European capital penetration in Tanzania led to increased food shortage and famine during the colonial period and therefore shortage of food supply during the colonial and post-colonial period remained a major concern in many African countries. However, no historical research to my knowledge has been conducted to

examine the implications of European colonialism on the AWIKS on food crop production and how it affected the availability of food in Kiambu County.

1.2 Statement of the Problem

During the pre-colonial period in Kiambu, the Agikuyu people relied on subsistence agricultural economy where food crop production roles were organized on basis of gender. Both men and women had different ranges of indigenous knowledge and expertise in subsistence agricultural production. The Agikuyu women were mainly responsible for producing seasonal food crops and therefore they used their indigenous knowledge systems on food crop production to influence the amount of food supply in their household. However, the introduction of the colonial capitalist economic production and European activities such as intensive land alienation, cheap forced labour laws, large scale commercial crop production, western education, Christianity disregarded the vital role of the Agikuyu women's Indigenous Knowledge Systems (AWIKS) on food crop production viewing them as uncivilized and backward. This had considerable effects on the Agikuyu women's indigenous knowledge systems on food crop production and on the availability of food in the households. Specifically, from 1902 when the European colonial government enacted the Crown Lands Ordinance which gave the Europeans legal backing to sell or lease land to the settlers, there was intensified contact and interaction between Europeans and the Agikuyu which had immense implications on the existing Agikuyu women indigenous knowledge systems on food crop production. Given this lacuna, this study focused on the historical analysis of colonialism and its implications on the existing AWIKS on food crop production from 1902 up to 1963 in Kiambu. An overview of the pre-colonial AWIKS on food crop production provided the basis on which the implications of colonialism was analysed. By so doing, the study addressed the role of African women in food crop production and the significant policy concerns with regard to the role of IKS on food crop production in ensuring food supply in the households.

1.3 Objectives of the Study

1.3.1 Broad Objective of the Study

The study sought to examine the implications of colonialism on the AWIKS on food crop production in Kiambu County from 1902 to 1963.

1.3.2 Specific Objective of the Study

The study was guided by the following specific objectives;

i. To explore the AWIKS on food crop production in pre-colonial Southern Kikuyuland upto 1902.
ii. To examine the implications of European colonial policies and practices on the AWIKS on food crop production from 1902 to 1963.
iii. To analyze the effect of marginalizing the AWIKS on the availability of food in Kiambu during the colonial period.

1.4 Research Questions

The study was guided by the following questions;

i. What were the AWIKS on food crop production in pre-colonial in Southern Kikuyuland upto 1902?
ii. What were the implications of European colonial policies and practices on the AWIKS on food crop production from 1902 to 1963?
iii. What effect did the marginalization of the AWIKS have on the availability of food in Kiambu during the colonial period?

1.5 Significance of the Study

This study focused on the historical analysis of the interaction between the Europeans colonial practices and the indigenous African subsistence mode of production, thus, it contributes highly to the wider understanding of economic history with specific attention to history of agriculture in Kenya. The study also makes a theoretical contribution to the Neo-Marxist feminism that tries to recognize the significant role of women in the economic development of their societies. The traditional African women earned high social status as food producers through proper utilization of indigenous knowledge in food crop production. However, the European colonization did not recognize this core role of the Agikuyu women's indigenous knowledge on food crop production in the process of establishing their capitalist economy in Kenya.

Through this study, the role of women's indigenous knowledge system on food crop production was revealed and documented.

The study also sheds light on the significant role of indigenous knowledge systems on food production in enhancing policy questions related to mitigation of hunger in Kenya. Though the food shortage was experienced in all the Kikuyuland during the colonial period, records show that Kiambu County especialy Ndeiya region experienced a series of severe food shortage than other areas of Kikuyuland. For example, in early 1917 and 1918 Kiambu experienced severe food shortage *(Ngaragu ya thika)* and in early 1930's the area was hit by another acute locust famine *(ng'aragu ya Itono)* (McGregor, 1927), while Throup (1988) also reported that in 1941-1942 and 1954-1955 the people of Kiambu experienced serious food shortage or the cassava famine *(Ng'aragu ya mianga)*. Further, African Women's Studies Centre (AWSC), found out that currently in Kiambu County, about 8.5% of the households have no food at all and are suffering from chronic food shortage (AWSC, 2014). In addition, the choice of Kiambu County of due to its unique history of food crop production and agricultural endowment which made a large numbers of white settlers to alienate large tracks of land in Kiambu earlier than other areas of Kikuyuland.

This study therefore, traced how the interaction between the European colonialist and the Agikuyu people influenced the existing women's indigenous knowledge systems on food crop production, which contributed to the lack of enough food supply from time to time. By so doing the study came up with recommendations could help the realization of Sustainable Development Goals (SDGs) 1 on 'eradicating extreme poverty and hunger', Kenya's Vision 2030 (GOK, 2008) and Constitution of Kenya 2010 (GOK, 2010) that guarantee every person right to be free from hunger, and to have adequate food of acceptable quality.

1.6 Assumptions of the Study

In the pre-colonial set-up Agikuyu women of Kiambu had indigenous knowledge systems on food crop production which they used to influence food availability in their households

European colonialism undernimed the existing AWIKS on food crop production to the detriment of the role of women's in food crop production.

The marginalization of the AWIKS on food crop during the colonial period resulted to reduction of food supply in Kiambu County

1.7 Scope of the Study

This study covered the period between 1902 and 1963. 1902 is a landmark in the history of Kenya as far as the European settlement in the white highland is concerned. It marks the year when the Crown-Lands Ordinance was passed and became the law of land. This Crown-Lands Ordinance stated that Africans were tenants at will of the British Crown. It provided the settlers with a 99-year lease and each settler was given 160 acres free of charge as an inducement to farm. Following the 1902 Crown-Land ordinance, significant section of European settlers settled in Southern Kikuyuland and extensive interaction with the Agikuyu people began. Major land alienation in Kikuyuland occurred in Kikuyuland from 1902 with the signing of the Crown-Lands Ordinance (Dilley, 1966). Henceforth, Agikuyu ownership of land was not recognized, and the community's land which was the traditional means of subsistence production was alienated. This also marked the beginning of European policy of supremacy that exerted major pressure and continuous neglect and underutilization of the Agikuyu women's indigenous knowledge systems. However, the study began by giving an overview of the existing pre-colonial AWIKS on food crop production to lay the background on which the implications of the colonial policies and practices on the AWIKS were examined.

The study ends in 1963; the year when the British colonial government officially handed over the instruments of governance to the Kenyan leaders. Kenya was officially declared a sovereign State and this year marked the transition landmark when colonialism officially ended. Though there were fundamental continuities in colonial and post-colonial agricultural production, the new political dispensation transformed African agriculture as they tried to cope with changes that were brought by the new political economy of independent government. Therefore, the post-independent period requires a different study because the new agricultural policies may have had different implications on AWIKS on food crop production from those of European colonialists. This period from 1902 to 1963 is also manageable and long enough to provide analysis of the immediate changes that occurred in AWIKS on food crop production during the colonial period. This forms the historical foundation

in tracing the genesis of current situation of insufficient food supply and a basis on which further research and reflections can be conducted.

The study picked on the Agikuyu of Kiambu County (which was referred to as Southern Kikuyuland during the pre-colonial period and Kiambu District in Colonial period) because they occupied a unique geographical position, which made them to be among the first people to interact with the Europeans. Kiambu County had a unique history as far as food production was concerned. It had over years engaged in local agricultural trade with the neighboring communities and with the Swahili traders especially during their long-distance trade (Miracle, 1974). There was high concentration and interaction between European colonial administrators, settlers and missionary and the Agikuyu people of Kiambu, especially the West Sub-counties (Kikuyu, Lari and Limuru) earlier than any other areas of the County because it had an attractive agro-ecosystem that made the Europeans feel more comfortable to establish settlement in this region. Therefore, considering that Kikuyu, Lari and Limuru Sub-Counties were high agricultural potential areas and therefore a lot of land was alienated in these areas compared to parts of Kiambu, they were most appropriate to focus on as areas of the study. However, the findings of this study can be applied in other areas of Kiambu like Githunguri and some part of Gatundu south that have similar agro- ecological characteristic.

Besides, the study picked on the Agikuyu women because they had immense responsibility in seasonal food crop production, which required them to be available throughout the year and therefore they commanded detailed indigenous knowledge food crop production. Hence, there is need to incorporate a feminist approach in historical studies on development of the Agikuyu agriculture during the colonial period. Studies on the agricultural development during the colonial period in Kiambu undertaken by researchers such Muchoki (1988) and Mwangi (2009) have looked at development of agriculture and land tenure system in general. Although their views are useful, the current study uses a feminist approach which is credible resource in revealing how colonialism marginalized the important role of AWIKS on food crop production.

1.8 Limitation of the Study

The respondents were not willing to disclose some information on sensitive issue of land alienation and land use patterns especially for those who participated in the Mau Mau War because of the inbuilt fear and mistrust that the information could be used against them. However, questions relating to such topics were phrased in a tone that was non-judgmental in order to help the respondent to feel more comfortable in giving honest answers. Also the study faced a challenge of getting informants who lived during the early period of establishment of colonial rule in Kiambu and therefore used other source of information where the respondents were not be available, while at the same time assuring the informants of confidentiality. Despite the limitations, adequate information was obtained from the respondents and the findings from this study may be applicable to other areas of Kiambu County that had similar Agro-ecosystem that attracted European settlers

1.9 Operational Definition of Terms

Adequate Food	This is the availability of food in sufficient quantity and quality to satisfy the dietary needs of an individual person.
Capitalism	The term was used to mean an economic and political system where material production is controlled by private owners in order to maximize profit. This ideology highly valued private ownership of property, capital accumulation, wage labour and competitive markets.
Colonialism	This is the practice of a nation dominating another one. In this study it will be used as a phenomenon by which the Europeans conquered, settled and acquired political and economic control over Kenya for their own benefits.
Colonial Policies	Exploitative and oppressive European colonial rules and regulations over the African people in Kenya
Economic Development	The process by which the country use the productive resources to improve the living condition and well being of its people
Food Crop Production	A deliberate process of raising or cultivating edible plants for human consumption
Food Availability	Food availability according to this study means community's proximity to centers of food crop production and household supply. Without food supply, a household is completely vulnerable to hunger
Implications	these are the meaning drawn from changes that were brought by European colonialism in Kiambu
Indigenous Knowledge	is the traditional, community specific and localized information was acquired through experimentation and observation over a period of time normally imparted orally from generation to

generation to enable the community to survive in specific environment.

Indigenous Knowledge Systems These are well established collection of skills, knowledge, innovations, and practices, which were developed by a specific community from an advanced understating of their local environment**.**

CHAPTER TWO
LITERATURE REVIEW

2.1 Introduction

This part gives a critical review of literature by other scholars and researchers related to colonialism in Kenya and its implications on the AWIKS of food crop production. the types of indigenous knowledge systems in food crop production, the effect of change in indigenous knowledge systems on food supply, and colonial settlement and agriculture in Kenya were also examined. The theoretical framework is also discussed.

2.2 Indigenous Knowledge System in Food Crop Production

Indigenous knowledge is as old as humankind, and the origin of science is embedded in traditional knowledge Mafongoya & Ajayi (ed), (2017). Therefore, in every community, there existed a lineage mode of production where the family constituted an autonomous centre of production and consumption that enabled it to become a self-sufficient unit. Indigenous knowledge systems in Africa (as similar to other indigenous societies around the world) were traditionally applied in harmony with the natural world. These traditional or cultural practices were creatively designed to address local ecological limitations by maintaining a sustainable utilization and protection of commonly shared natural resources (Lalonde, 2018).

Coquetry (1976) observed that the pre-colonial African mode of production was based upon the combination of a patriarchal agricultural economy with a low domestic production. Mafongoya & Ajayi (ed), (2017) pointed out that these knowledge systems are transmitted and renewed by each succeeding generation, ensuring the wellbeing of people by providing food security, environmental conservation, and early warning systems for disaster risk management. Local communities went through a series of bad weather situations in the past; they acquired some experiences and developed home grown methods to address these challenges.These studies do not give specific attention to the Agikuyu women's indigenous knowledge, which is the key focus of the current study, however, they shed light on how other indigenous African communities used their local knowledge in production and hence becoming self-sufficient unit.

Olatuku (2009) reported that majority of rural women of Ogur community in Nigeria were illiterate famers but they had vast knowledge of traditional culture of food preservation among other skills. However, although the indigenous women had vast traditional knowledge, it is possible the colonialists affected the existing indigenous knowledge systems and consequently the sustainability of food supply. The traditional famers used indigenous knowledge on climate and weather observation, selection of good quality seeds for sowing, processing and preservation of food crops to have secure and reliable source of food (Musembi & Cheruiyot, 2016). These studies highlighted the nature and types of indigenous knowledge used by other communities in Africa which was a significant insight to this study. But, the current study finds out the types of indigenous knowledge and skills that were held by Agikuyu women and the importance it had on food crop production.

Similarly, this point had been clearly exemplified by Nathani (2014) who studied the indigenous African knowledge in food processing practices among the rural women of Embu in Eastern Kenya. She demonstrated how the Embu women used proverbs and folktales to preserve and communicate their knowledge and cultural values. Nathani's work was an educational research that specifically examined how teaching and learning can be transmitted using the indigenous knowledge system. She had stated that this highly valued indigenous knowledge system was suppressed by the colonial and post-colonial education systems. Nathani's study emphasized on the role of IKS in education system during the colonial period but the current study examined the women's indigenous knowledge in food crop production. This study was a departure from Nathani's work.

Ngenwi (2010) discussed lessons from women's indigenous knowledge practices in developing appropriate climate change adaptation strategies in Cameroon. She stated that although women account for almost 80 per cent of the agricultural sector in Africa, 70 per cent of the 1.3 billion people in the developing world who lived below the threshold of poverty were women. Ngenwi further observed that over the years women had developed various adaptation strategies to cope with the effects of climate change. However, they were still caught up in the vicious cycle of hunger, poverty and increased vulnerability. She went on to say that women had extensive unique knowledge and skills, had good social networks within their own communities, and

they played an important role in managing resources for domestic use. According to Khatri-Chhetri *et al*. (2017), women ingeniously designed the indigenous and cultural practices to address local ecological limitations by maintaining a sustainable utilization and protection of commonly shared natural resources. This research work formed the basis for need of the current study to examine how women's valuable indigenous skills and knowledge in food crop production had been affected during the colonial period

Mugisha- Kamatenesi *et al.* (2008) examined the use of indigenous pesticide plants in improving crop productivity. They reported that some of the subsistence farmers in the Lake Victoria Basin (LVB) relied on the use of botanical pesticides that were extracted from various plant parts (stems, seeds, roots, leaves and flower heads) of different plant species and other natural methods of pest control instead of using synthetic pesticides which had high cost and availability issues. However, this indigenous knowledge on botanicals had remained largely unexploited with limited regional research and resources committed. Vinita *et al*. (2017) further observe that many modern chemical pesticides, particularly those containing chlorinated compounds, were often persistent in the environment which could be toxic to humans but with the application of indigenous method of pest control the harmful effect of chemical pesticide could be overcome. Their study show the value of the traditional pest control methods especially the use of indigenous pesticide plants, which could be improved and used intensively to enhance crop productivity and food security.

Further, Ndeda (1993) discussed the role of Luo women in the political economy of Siaya. She examined the impact of male labor migration on rural women of Siaya between 1895 and 1963. She pointed out that colonial capitalist policies favoured settlers and altered the division of labor and therefore women were the most affected by the colonial policies. According to her the role of women in the food production should not be over-looked. Although Ndeda did not specifically look at the Agikuyu women like the current study, she recognized that women had great potential in socio-economic life of communities.

Bennett (1963) stated that it was a natural duty of the Agikuyu women to prepare and cook the food as they knew very well the wild green herbs, wild edible roots and

grains, they had vast knowledge of when, where and what to plant in order to sustain food production in their homestead. In addition, Leakey (2007) reported that most burden of food production activities in the pre-colonial set up fell heavily on women. Bennet (1963) and Leakey (2007) work show that the Agikuyu women used their indigenous knowledge in pre-colonial agriculture which played a key role in ensuring sufficient food supply in the community. However, they do not analyze the effect of colonialism on the AWIKS on food crop production. This study examined these indigenous knowledge systems in detail and explored how colonialism affected them.

Land ownership was very important in the traditional organization of the Agikuyu because as agriculturalists, the Agikuyu people depended entirely on the land (Kenyatta, 1965; Hobley, 1967). According to Kenyatta (1965) during the cultivation of the fields, there was a clear division of labour. He pointed out that women were involved in labour intensive seasonal food crop farming and domestic chores to ensure their families have enough food supply. According to Hobley (1967), African women played significant roles in food production and for generations they used indigenous skills in planting, tending the fields during the growth of crops, the harvest of crops, storing and crushing the crops in wooden mortars and grind it into meal. This shows that women were expected to have knowledge of seasonal weather and climate changes, when and how to prepare fields for planting and clearing weeds and how to handle and store grains after harvesting. Kenyatta (1965) and Hobley (1967) show how the Agikuyu people owned land, their land use patterns and the clear division of labour in the food crop production but they have not examined the AWIKS on food crop production and how it was affected by European colonialism. This study sought to explore these AWIKS and also examined how these indigenous food crop production practices were transformed by the Europeans.

Taylor (1969) covered the pre-colonial Kikuyu agriculture where he argued that some form of shifting cultivation appeared to have been practiced but there is very little reliable information on the form it took. This work generally discussed the pre-colonial Kikuyu agricultural practices which is relevant information to the current study. However, Taylor assumed that it is only shifting cultivation that existed in pre-colonial Africa. Contrary to Taylor's observation Hopkins (1973) stated that the agricultural history of the pre-colonial period is a history of innovation rather than of

stagnation. Therefore, the focus of this study was to find such innovation and the remarkable changes in the traditional agricultural systems resulting from European colonialism.

2.3 Effects of European Colonialism on the indigenous Agricultural Production Systems in Kenya

The interaction between peasants' food production and commodity production under the colonial capital penetration in Tanzania undermined the traditional drought tolerant food crop leading to increased food shortage and famine during the colonial period (Bryceson, 1980). This was probably because although African women were the major indegenous food crop producers, they were excluded from land ownership in the colonial and post-colonial period which only worsened the food shortage situation. The creation of a wage labour and the reorganization of African labour that developed during European settlement in Kenya created a new constraint upon the African population (Wolff, 1974). This was due to limitation of their land in the reserves and the shifting of African labour for Europeans. Although these studies have not discussed specifically on AWIKS on food crop production, they gave a general understanding of impact of British imperial policies in Kenya between 1870 and 1930.

Olenja (1991) and Nasimiyu (1985) while examining the effect of introduction of inedible cash crop and migrant labour on food crop production in Kenya reported that the world economy disrupted the African society's division of labor, which denied the traditional households labour force. Women were left behind and they took over the tasks that were previously done by their male counterpart, which left them overburdened and marginalized. Further, Brett (1973) explored the nature of the connection between colonialism and underdevelopment. He viewed underdevelopment from the relation between the capitalist and pre- capitalist modes of production. According to him, capitalism created an economy characterized by massive and growing inequalities. These writes use underdevelopment theoretical approach to generally explore the nature of integrating Africans in European colonialism but the current study uses Women and Development (WAD) theory to specifically look at the nature in which the African women were integrated into colonial capitalist economy.

Omwoyo (1990) examined the organization and transformation of agriculture among the Gusii during the colonial period and stated that it was based on the indigenous knowledge and mastery of their environment. He argues that the colonial capitalism and the economic system modified, marginalized and subordinated the Gusii pre-colonial agricultural system. Similar observations were made by Esese (1990), who argues that the Wanga community of Western Kenya had efficient, self-sufficient and dynamic agricultural system prior to the establishment of colonial rule in Kenya. These two writers discuss how the pre-colonial agricultural productions in other Kenyan communities were subordinated by the European colonialists. This gave the current study valuable insight on how colonial policies disrupted pre-colonial agricultural systems in other Kenyan communities. However, the studies have looked at agricultural production in general and not at specific role that was played by the women's indigenous knowledge systems in food crop production. They also used underdevelopment theory to examine the subordination of African subsistence agriculture during colonial period while the current study uses the WAD theory examine the changes in AWIKS during the colonial period.

Zeleza (1985) stated that the Europeans introduced the conventional knowledge systems that viewed the Africans subsistence production as backward, static and undifferentiated. He reported that the infusion of modern economic ideologies, technology and cultural values was meant at under-developed African countries. According to him, the colonialism undermined the social political and ecological organization of the Kikuyu people and their fertile land and productive labour force were alienated by the European. He however pointed out that did not mean that the pre-colonial African societies were simple and static but they were undergoing important environmental and ecological changes which needed development of new coping mechanism and strategies (Zeleza, 1993). Although the writer did not specifically look at the AWKIS on food crop production, he demonstrated the perception and attitude of the European colonialists' towards the pre-colonial practices of the Africans and also how colonial capitalist mode of production disregarded the existing pre-colonial African subsistence production.

Likewise, Warren *et al.*(1989) documented the role of nineteenth century colonialism and social science in ignoring the indigenous knowledge, however, pointed out that

studies that depicted local communities and their knowledge as primitive, simple and static are now countered by a rapid expanding research that describes the complexity of many indigenous natural resources. Mafongoya & Ajayi (ed), (2017) stated that the primary concern of European settlers was not to understand other indigenous knowledge systems *per se*, but rather to gather from the indigenous knowledge information for the development of colonial science and help in achieving their capitalism interest. Similary, Darko (1989) pointed out that the current food crisis in Africa has its root causes in the history of relationship between Africans and western countries. He suggested there should be an agricultural change that is centered on integrating the African indigenous knowledge systems in promoting the growth of domestic food resources in order to reduce rural poverty. The current study examined the Agikuyu women's indigenous knowledge system on food crop production and how it was disrupted by European colonial policies and practices.

Furthermore, Kitching (1980) examined the impact of colonialism and imperialism on a number of Kenyan societies and traced the development of classes and economic change in Kenya between 1905 and 1970. He identified a number of changes and adaption that pre-colonial economy underwent after 1905 especially in Kikuyu land and in Nyanza province. Although this author did not say much about the African women's indigenous knowledge in those societies, he gave a general understanding of how colonialism interacted with indigenous societies the resulting inequalities and imbalance of such interactions. This study tackled the Agikuyu women involvement in such systems to fill the gap identified by Kitching's research.

Kanogo (1993) reported that the establishment of colonial rule in Kenya and attempt to turn the country into a white settlement had a profound effect on the local African population because African land was alienated for European settlers' occupation and many Africans were dislocated into squatter land. She stated that the period between 1900 and 1950's was characterized by expansion of settlers' settlement, commercial food and cash crop farming, new agriculture practices, and social policies. she gave an example of Kiambu- Limuru areas where about 60,000 acres of Kikuyu land was alienated between 1903 and 1906 and by 1933, about 109.5 square miles of highly fertile kikuyu land had been alienated for European settlement, by 1910 there were about 11, 647 Agikuyu people working on the Kiambu settlers farms. In addition,

Kanogo (2005) observed that the European colonialists found the Agikuyu women practicing traditional indigenous knowledge system to ensure food crop production for continuous food supply in their households. However, the development of settler's plantation and mixed farming probably created a demand for a large number of wage labourers which indeed affected the Agikuyu indigenous division of labour. The current study went a step further to find out specifically the implications of European land and labour policies on the AWIKS on food crop production and how it affected food supply in the households.

Similary, Were (1985) and White (1993) stated that the colonial officials constrained female advancement by limiting access to education and wage employment and that throughout the colonial period, African women consistently lagged behind in education and, thus, failed to acquire the skills needed to participate in the modern economy. This current study aimed at finding out how specifically the role of Agikuyu women indigenous knowledge system was affected by European settlement and occupation. Muchoki (1988) also examined the organization and development of Kikuyu agriculture in Kiambu between 1880 and 1920. According to him, the Agikuyu women ensured there was enough food supply in the households through their food crop production activities. He examines the changes that characterized Kikuyu agriculture in first two decades of colonial period. His study sheds light on the pre-colonial agriculture in Kiambu. But it does not deal with women's indigenous knowledge systems which is the main focus of the present study. Similarly, Mackenzie (1998) examines agricultural production in Murang"a District during the colonial period and she focused on class and gender politics surrounding soil conservation. In her view, this played a role in separating Agikuyu agriculture from the wider colonial political economy. The study is important to the current study in highlighting the effects of colonialism on women's agricultural production.

In addition, Musalia (2010) examined how external factors influenced relations of production within household and reported that the Agikuyu patriarchal power relations colluded with European patriarchy. According to her the colonial government was biased against African women because it had a pre-conceived idea that an African woman was supposed to be confined to domesticity, nurture their children and husbands, and cater for rural subsistence food crop production. As a

result, women became completely dispossessed, their labour gradually increased and they could only access land through a male guardian, and their role in active economic production was ignore. Musalia used a gendered approach to examine how colonialism influenced the power relations in food crop production. However, the current study used a feminist approach to analyze the implications of colonialism on AWIKS on food crop production.

2.4 Effect of Marginalizing the Indigenous Knowledge System on the Availability of Food

Indigenous knowledge is very important part of the development and therefore it must be gathered and documented rationally and systematically. Indigenous knowledge systems have not to a larger extent been used, documented and stored in an orderly way and therefore it is in danger of extinction. The desire to use modern and new technologies is threatening the use and preservation of traditional knowledge system held by native people (McGregor, 2004).

Brokensha *et al.* (1980) stated that to ignore traditional knowledge system is to ensure failure in sustainable development. Similarly, Shepherd (1998) postulated that sufficient food supply does not depend on crop production alone whether at household, region or country level. It depends to a greater extent on people's ability to command the resources to acquire the food they need either through production, farm production of cash crops, or other income-earning activities. He discussed the disadvantages of the over-reliance only on the modern scientific knowledge in agricultural production and suggested the integration of the indigenous knowledge in agricultural production to reduce chances of crop failure. Moreover, in analyzing the current subsistence crop production and its role in the sufficient food supply, Shepherd maintains that sustainable agriculture should also focus on developing mechanisms of crop production for consumption by the peasant families to ensure the availability of food for rural people (Shepherd, 1998).

Similarly, Brown *et al.* (2007) observed that indigenous knowledge was an essential product of adaptation of farming practices to the local environment. This created distinctive indigenous farming practices as well as biodiversity rich agricultural products. The two writers argued that if the traditional farming practices can be

properly used and sustained, the agricultural biodiversity can also be preserved for future generations and subsequently supporting food sufficient supply. Therefore, the current study examined the implications of colonialism on the AWIKS on food crop production, and further analyzed how the effect of change in use of indigenous knowledge systems during colonialism affected the supply of food in Kiambu County.

Giving a personal experience from Malawi, Kamwendo *et al.* (2014) illustrated the way in which Indigenous Knowledge Systems (IKS) on post-harvest strategies were used by local communities in Malawi for food preservation and storage and how they assisted in enhancing the availability of food. The authors argued that the use of traditional ways of food preservation and food storage increased food supply and access at household level. According to them, the abandonment of the indigenous knowledge systems on food crop production is one of the causes of food shortage in the contemporary Malawi societies. Therefore, this study examined how the change in use of AWIKS during the colonial period affected the supply of food in Kiambu.

Adekunle *et al.* (1997) observed that despite the fact that Nigerian rural communities had been producing their own food and conducted their own farming activities, the role of indigenous knowledge in the production of rice had not been appreciated. The researchers argued that the indigenous agricultural practices had been ignored resulting to low rice yield. However, they concluded that considering the IKS in rice production could be cost-effective, environmental friendly, and easily communicable in rice cultivation, processing and storage to enhance food security. This study highlighted the use of indigenous knowledge system by other communities in Africa for agricultural production to ensure sufficient food supply in these communities. However, they did not specifically show how underutilization of women's indigenous knowledge systems on food crop production affected the supply of food in the households.

Kinyanjui (2014) pointed out that Kenya Indigenous Knowledge (KIK) on agriculture and livestock keeping, prediction of different weather patterns and food preservation techniques were being used and are still being used by 98% of the farmers in Masaai community in production and post-harvest management (Kinyanjui, 2014). However, failure to incorporate the use of organic manure, crop rotation, traditional food

preservation methods like smoking of meat, ash to preserve food crops, livestock to control breeding indigenous knowledge, indigenous herbs to treat some of the animal diseases, together with other scientific methods have contributed to acute food shortages during the time of drought in Masaai land. He observed that the main reasons why the Masaai community should integrate the IKS and scientific knowledge to enhance food availability is because they were used to the Indigenous Knowledge system, it was reliable, accurate, effective and more affordable (Kinyanjui, 2014). The current study analyzed the effect of lack of proper use of AWIKS on food availability in Kiambu.

In analyzing the integration of Indigenous Knowledge to enhance Food Security in Millennium Village Project at Bar Sauri in Nyanza Province that was established August 2004, Awuor (2013) stated that within a period of just two years after its initiation, the village had seen remarkable progress that saw it rise from chronic hunger to more than triple the crop production. This is due to steady rejuvenated recognition and proper use of indigenous knowledge for food crop production. However, Awuor reported that this recognition had not downplayed the role modern scientific knowledge in food crop production. He advocated for incorporation or integration of the two knowledge systems for enhanced production and eventual food sustainability. Therefore, he stressed that the role of indigenous knowledge in sustaining the livelihoods of Kenya's poorest people, enhancing availability of food and improving agricultural productivity cannot be ignored. Indigenous peoples were entitled to the recognition of the full ownership, control and protection of their cultural and intellectual property. The current study was more specific in examining how the change in use of AWIKS on food crop production affected the supply of sufficient food.

Gender perspective in agricultural indigenous knowledge systems has been examined by Ashley (2000). She calls for awareness that men and women have different range of indigenous knowledge and expertise and therefore it is essential to identify and understand that the division of agricultural labour by gender means that men and women had specific social structure in which they played their specific roles and allocated resources in farming systems. Similarly, the Agikuyu food crop production was gendered, with women cultivating legumes, pigeon peas, green grams, kidney

beans, maize, sorghum and millet while men cultivated sugarcane, bananas, yams, cassava, gourd, tobacco and sweet potatoes (Musalia, 2010).This indicated that women were responsible for producing labour intensive seasonal food crops while men grew perennial crops. This gender-specific foodstuff production ensured continuous food supply that prevented food shortage. This meant that the Agikuyu women commanded detailed indigenous knowledge on food crop production and they understood their environment very well in order to ensure their day-to-day food supply needs are met. They also used the indigenous knowledge to grow foodstuff that they later exchanged with other communities (Robertson, 1997).

Further, food crop production Haugerud *et al.* (1991) reported that sustainable agriculture in all nations will require more effective collaboration and integration of scientific methods with the indigenous farming methods (non-scientific farming). However, Khatri-Chhetri *et al.* (2017) pointed out that while Indigenous knowledge has been undervalued and neglected and it is supposed to be privileged and empowered, but this should not lead to an opposite neglect of scientific knowledge. The current study went a step further to find out how lack of collaboration of the European new colonial labour systems, new crops and farming methods and the AWIKS affected supply of food in the households.

Similarly, (Kanogo, 1989) revealed that the colonial capitalist economic policies marginalized women through land alienation, forced labour regulations and cash crop production. She further stated that the decline of world prices during the 1929 -1932 economic depression affected African producers. Both African and European producers suffered from the declined prices of African commodities especially of sesame, beans, hides, skins, ghee, coffee and maize. By 1931 there was a continued negligence of African producers and traditional exchange systems instance, most Africans surplus food crop production was directed to internal marked where the prices were very low and was not sufficient enough to feed African laborers in the reserves

Further, Wambugu (2005) in examining the effect of liberalization on maize marketing systems in Kenya reported that Kenya continues to experience food shortage in general and maize in particular and that food security cannot be achieved

without an efficient food marketing systems. The writer revealed that lack of efficiency marketing of agricultural products contributed to community's vulnerability to food shortages. Therefore, the current study also went a step further to find out whether enhancing food crop exchange system was one way of ensuring sufficient food supply in their households during colonial period.

Therefore, based on the above extensive literature review and the gaps identified on the subject of colonialism and the AWIKS on food crop production, a historical inquiry need to be done on this important area of investigation.

2.5 Theoretical Framework

The study was analysed within the Women and development theory (WAD) that draws its ideas from Neo-Marxism and dependence theory.WAD analyzed the role of Agikuyu women in food crop production and ensuring food availability in the families, which in return guarantees Sustainable Development in the community.

2.5.1Women and Development Theory

The Women and Development approach emerged as a critique of the Women in Development (WID) theory in the second half of the 1970s. WID was linked to the modernization theory that argues that the status of women and gender equality in the Third World Countries would automatically be improved by wholesale adaptations of new western capitalist technologies, institutions and beliefs and by integrating women in the capitalist economic system (Boserup, 1970). The theorist assumes that African women were not integrated in the process of development before western capitalism and therefore integrating them into western capitalism would create for them more opportunities in education and employment thus increasing their level of productivity and improve their lives. This approach to the study of women was criticized of failing to acknowledge the collective and distinctive roles that the African women were playing in developing their own societies before European colonialism. It also fails to recognize that African societies were not static before colonialism and that they were gradually evolving in response to environmental variations. These weaknesses of WID gave rise to Women and Development (WAD), which draws its ideas from neo-Marxism and dependence theory.

This study used a neo-Marxist theory to analyse women's marginalization by European colonialism to examine how European colonialism undermined, weakended and pushed to the periphery the AWIKS on food crop productin. It specifically used the WAD approach which was influenced by dependency theory and neo-Marxists approaches to underdevelopment whose main focus was on the role of external forces such as colonialism and imperialism in changing and weakening Africa's indigenous socio-economic and political institutions for their capitalist interests. The basic argument of the dependence theory was that the way in which the less developed Third world political economy was incorporated into the systems of First World capitalism led to the evolution of a cyclical process of internal underdevelopment and external dependency (Frank, 1967; Dos Santos, 1970; Amin, 1974). With regard to agriculture, the dependency theorists perceive the colonial capitalist policies such as land alienation, labour policies, the introduction of new cash, prevention of Africans from growing cash crops and poor prices paid for African's agriculture as a major step towards underdevelopment and dependency (Rodney, 1972; Amin, 1976).

Therefore, the neo-Marxism feminism theorist argues that indeed the colonial policies, institutions and international division of labour contributed to the confinement of women in the less developed sectors of the economy reducing their bargaining power compared to that of men in their societies (Pala, 1981). Boserup (1970) emphasized that colonial capitalism limited women's access to public wage labour, access to main means of production and they were treated as second-class citizens, thus, their traditional status declined significantly. This was particularly acute in Africa and other areas where traditional female farming systems predominated. In this connection, neo-Marxist feminism focus was to explain the relationship between women and the process of capitalist development in terms of material conditions that contributes to the exploitation of women (Peet, 1999). Therefore, during the First World Conference on Women (FWCW) in Mexico City organized by UN in 1975, the neo-Marxist feminists came up WAD approach to the study of women (Visvanathan, 1997).

2.5.2 Basic Tenets of Women and Development Theory

The study adopted the Women and Development (WAD) theory as proposed by (Rathgeber, 1990) which focuses on relations between men and women. She argues that women have always played an important role in the economies of their societies as both productive and reproductive actors but it was how they were integrated into global capitalism by the core countries that explains their marginalization, subordination, oppression and dependency on men. The European colonialism stressed on the western patriarchy social structure that separated the private and public spheres assigned to women and men respectively. This compartmentalization of social structure was aimed at making the colonial capitalist ideology work for the Europeans, but its patriarchal stereotype ignored many African women's institutions and pushed them to the periphery.

Rathgeber (1990) also points out that this historical development of the division of labor had been oppressive and was based on structural separation of men from women or local people from foreigners. She stressed that WAD accepts women as important actors in the economy of their own societies and their work as central to the maintenance of their societal socio-economic structures. However, she discourages a strict analytical focus on the problems of African women independent of men because both sexes were disadvantaged by the colonial exploitative capitalist structure. Parpart (1986) also believe that recognizing women's distinctiveness would play a very special role in the development process.

Parpart (1986) illustrated the experience of women in African during the colonial period, she argued that colonialism changed the traditional subsistence economy and that when African women were encouraged to engage in colonial forced wage labour and participate in cash crop production, their agricultural workload increased tremendously and their control over agricultural products and labour declined while their distinctive role in food crop production was pushed to the periphery. Land alienation by the colonial officers also limited women's access to land, land use and other resources. It was for this reason that Rathgeber (1990) suggested that there was an urgent need to give equal value and recognition to both women and men distinctive roles through the use of WAD approach to development agenda especially in

agricultural production because women undervalued roles are vital for economic growth of their societies.

WAD theoretical framework was very useful in this study as it recognized the distinctive roles played by the Agikuyu women's indigenous knowledge systems in food crop production particularly in ensuring adequate food supply in their households. It was also relevant in examining how Europeans colonialists through their policies and practices undermined, weakended and pushed to the periphery the AWIKS in order to pave way for the colonial capitalist production. This exposure helped raise public consciousness, to document the important role and contribution of AWIKS in the food crop production and to bring them into policy arena for possible integration in the modern food crop production practices in order to mitigate food shortages.

CHARPTER THREE
RESEARCH METHODOLOGY

3.0 Introduction

This chapter presents a description of the research locale and research design. Additionally, the sample size, sampling procedures, data collection procedures and data analysis are discussed.

3.1 Location of the Study

The study was carried out in the Kiambu County, which was initially referred to as Southern Kikuyu land in the pre-colonial and Kiambu district during the Colonial period. The present study follows the boundaries as they were in 1985. The County is in Central Kenya and is mostly inhabited by the Agikuyu people who are agriculturalists. The County was first set up in 1925, as Kiambu Native District Council, later it was changed to Kiambu African Native Council in 1958. It gained its official name *"Kia-mbu*" meaning a place of screams arising from tribal raids conducted by the Maasai, who often raided the Agikuyu villages for livestock (Hezra Njehia, O.I 2017).

According to the Kiambu County Integrated Development Plan (2013-2017), Kiambu County covers an area of about 2,543.5 km^2 and it borders the Counties of Nairobi to the South, Machakos to the East, Muranga to the North and North East, Nyandarua to the North and Nakuru to the West. It comprises of 10 Sub-Counties namely: Lari, Ruiru, Kikuyu, Limuru, Githunguri, Thika East and Thika West, Kiambu, Gatundu North, Gatundu South (Appendix 1). According to the Kenya National Bureau of Statistics (KNBs), the Kenya Population and Housing Census (KPHC) of 2009 indicated that the County's population was 1,602,754 comprising 791,494males and 811,260 females (KNBS, 2015).

Agricultural Sector Development Support Programme (ASDSP) reports indicated that out of the total land area of the county, 1,878 km^2 was arable land, 649.7 $km^2$was non arable and 15.5 $km^2$was under water mass. The average holding size of land was 0.88 acres on small scale and 169.5 acres on large scale. The small scale was common in upper highland of Gatundu South, Lari, Limuru, Kikuyu, and Githunguri that lie at an altitude of 1,800 meters above sea level. Large holdings were found in the lower

highlands of Thika, Juja, Ruiru and Gatundu North sub-counties that lie below 1,500 meters above sea level. The study was conducted in three selected Sub-Counties of Kiambu West (Lari, Limuru and Kikuyu) that were in the upper highland that were characterized by fertile soils and plenty of rainfall for agriculture (ASDSP, 2013). These three sub-counties were selected because they had high agricultural productivity in pre-colonial period which attracted large number of Europeans settlers in this region earlier than other areas of Kiambu upper highlands. However, during the colonial period the three Kiambu West Sub-Counties (Lari, Limuru and Kikuyu) could not feed their population sufficiently due to series of drought and famine, which was a clear indication that there was a problem that needed investigation.

3.2 Research Design

This research used descriptive research design as it helps to probe into the state of affairs as it exists (Kothari, 1985). This design enabled this study to organize data into common patterns that emerged during data analysis then those patterns were used to give an in-depth descriptive analysis of the situation as it existed during the colonial period of Kiambu. Furthermore, historical trend analysis was also used to give the overall pattern of change in AWIKS during colonial period which was divided in three major historical periods from 1902-1918, inter-war period from 1918-1939 and decolonization period from 1939-1963.

3.3 Target Population

The whole of Kiambu County had a population of 1,602,754 people while the subject of the study was drawn from a total of 375,781 people in 3 sub-counties of Kiambu West (Lari Sub-County's had 122,610 persons, Limuru had 129,609 persons and Kikuyu had 123, 562 persons). The target population was 15,047 persons who were 65 years and above in the three sub-counties (Lari were 4,306 persons, Limuru had 5,058 and Kikuyu had 5, 683) [KNBS, 2015]. The target population included political and religious leaders, farmers, administrators (colonial chiefs, headmen, school adminiatrators), agricultutural officers and women leaders who were residents of Kiambu during the colonial period.

3.4 Sampling Procedures

Due the complexity and the expansiveness of Kiambu County, it was necessary to narrow down the area into a manageable research area. Kiambu County had 10 Sub-Counties and the study sampled 3 sub-counties from Kiambu West that is; Kikuyu, Limuru and Lari. The 3 Sub-Counties were sampled purposively on the ground that they had high colonial penetration than the rest of Kiambu due to their location in the Upper Highland zone which was highly fertile, with plenty of rainfall and proximity to Nairobi that provided an environment attractive to the Europeans settlement earlier than other areas of Kiambu. Furthermore, severe food shortage was experienced in the three Kiambu West Sub-Counties (Lari, Limuru and Kikuyu) during the colonial period despite the fact they had high food crop productivity during the pre-colonial. From the 3 selected Sub-Counties (Kikuyu, Limuru, and Lari), two (2) wards were purposely selected based on the fact that they had high concentration of colonial native reserves, villages and settlement Schemes. The highest ranked Wards were Ndeiya, Tigoni/Ngesha, Karai, Kikuyu, Lari/Kirega and Kinale and this is where the study was conducted.

The study also used non-probability sampling procedures and techniques which included purposive sampling procedure and snowballing or chain technique to identify the respondents. Purposive sampling procedure was used to choose respondents aged 65 years and above, because they are senior members of the community and they had interacted directly or indirectly (their relatives) with the Europeans during the colonial times. Therefore, they had first hand information (the eye witness account) or the second hand informationfrom from accounts of those who interacted with the Europeans during their life span. Therefore, the sampled group was the bearers of most relevant, acculate and reliable information to the study. Those respondents who were in leadership position such as religious leaders, political leaders, women group leaders, school administrators were purposely sampled because of their reliable information on the situation as it was during the colonial period. This meant that only the respondents who were the bearers of the most relevant information were interviewed.

3.5 Sample Size

The study was guided by the concept of data saturation by (Morse, 2000; Baker & Edward 2012; Donna, 2013). Since this was an interview based historical study, the concept of data saturation as recommended by interview-based research expert (Donna, 2013) was also used to purposively pick the respondents who had the most relevant information to the study.

The recommended sample size to achieve data saturation is reached when all important themes, experiences and perceptions are uncovered in oral interviews and the information begins to be repetitive, which implies that it was unlikely that conducting more interviews would reveal new information. Thus, during the study the data reached saturation at 68^{th} interview and therefore only 68 respondents were interviewed. The justification of a sample size of 68 respondents was supported by Miller (2012) who stated that a sample size of 6-70 respondents is valid and reliable data depending on the research financial resources, research scope, the nature of inquiry and participants having high level of relevant knowledge to the topic of inquiry.

3.6 Research Instrument

3.6.1 Interview Guide

Data was collected using in-depth interview guide for key respondents which had five sections (Appendix II). Section A covered the demographic data of the respondents, Section B included questions on the types, role and value of the AWIKS on food crop production, Section C & D had questions on implication of colonialism on the AWIKS, and Section E covered the effect of change in use of AWIKS on supply of food in Kiambu County. The interview guide questions consisted open ended and closed ended questions, since this was a historical study that endeavors to reconstruct the past, it relied on respondents' firsthand account and secondhand account of events that took place during the colonial period. Where the respondents were not available to give oral information especially, in-depth archival records data collection and secondary data collection were conducted and corroborated to enhance validity and reliability of the information.

3.7 Data Collection Procedure

The data for this study was collected as per the objectives from different sources of history. Oral sources, archival records and secondary data were gathered to inform the study.

3.7.1 Determination of the pre-colonial Role of AWIKS on Food Crop Production

In determining the AWIKS and practices on food crop production prior to European colonialism in the study area, an in-depth interview was conducted to the adults who were over 65 years who were identified purposively using the snowballing technique. The field interviews were conducted with the help of research assistants who took notes and recorded the information during the oral interviews. The in-depth interview guide obtained information from key respondents' firsthand account and second hand account of historical events. First-hand archival records such as colonial political records, Annual reports, agricultural reports, minutes and correspondences, native affairs policies, and economic survey books from the Kenya National Archives and other Archives together with secondary sources from books, theses, dissertations, journals, periodicals, seminar and conference papers, public documents and official records, local dailies, magazines and electronic information were also consulted. These were derived from various libraries and documentary centers such as at Kenyatta University, University of Nairobi, United Nations Environmental Programm (UNEP), British Institute in Eastern Africa (BIEA), The Catholic University of Eastern Africa, United States International University, Chuka University library, among others. All these sources of history were used to collect in-depth information on the following;

i. The early history of the Agikuyu socio-economic practices which included their pre-colonial agricultural practices
ii. The role of Agikuyu traditional women in land use especially food crop production
iii. Main food crops that were grown by men and women, the unique knowledge, skills and practices that were held by the Agikuyu women
iv. The traditional value of AWIKS in food crop production process and enhancing availability of food in the households.

3.7.2 Examining the Implications of the European Colonial Policies and Practices on AWIKS

In examining the implications of colonial policies on the existing AWIKS on food crop production from 1902 to 1963, in-depth oral interviews were conducted with the help of research assistants. The period was divided into major historical events that occurred during the colonial period (1902-1918, inter-war period 1918-1939, and decolonization period, 1939-1963) then historical trend analysis was conducted to identify patterns of changes in AWIKS from one time period to another. In time period where obtaining oral information was a challenge, in-depth archival records data and secondary data was used to obtain information for most or all the perceptions on the following;

i. The establishment of colonial socio-economic policies and early interaction between the colonialists and the Agikuyu.
ii. The colonial policies and practices and how they affected the AWIKS on food crop production
iii. The main crops that were being grown in the area during colonial period and the new crops that were introduced in the area
iv. The implications of the colonial socio-economic policies on the AWIKS on food crop production

In addition, the examination of the related records from the Kenya National Archives and other Archives, in-depth oral interviews together with gathering of information from secondary sources from books, theses, dissertations, journals, periodicals, seminar and conference paper, public documents and official records, local dailies, magazines and electronic information from various libraries and documentary centers as mentioned earlier. The information that was collected from these sources included;

i. The effect of the First World War and the Second World War on AWKIS on food crop production
ii. The Effect of nationalist movements and the early 1930s World great depression and locust invasion on AWIKS on food crop production
iii. The implications of Second World War and Mau Mau War on the AWIKS on food crop production

iv. Strategies or measures by the European Colonialists to improve food crop production
v. Social- cultural profile, annual Reports, and handing over reports on the colonial administration.

3.7.3 Analysing the Effect of Marginalizing Indigenous Knowledge System on the Availability of food

Oral interviews, Archival records information and secondary documents data was collected to provide information with regard to how the change in AWIKS affected the availability of food in the study area. Specifically, these sources were used to obtain information on the following;

i. How the introduction of commercial crops production and farming methods affected the AWIKS in ensuring availability of food
ii. How the effects of colonial forced labour demands on AWIKS affected food availability in Kiambu
iii. Were the people of Kiambu consuming wild food during the colonial period
iv. Was there any change in the time of harvest and the way they stored and preserved of food crop due to colonialism
v. How many meals did they eat per day and the types of staple food crop that they ate at home during the colonial period
vi. How much food crop products did they get from their farm and the strategies they came up with to ensure sufficient food supply in their household during the colonial period

3.8 Data Analysis

After data collection, the recorded interview (in Kikuyu language) was transcribed and translated into English. It was then categorized through coding and tabulation. Data was analyzed using the Statistical Package for Social Scientists (SPSS) and presented using basic simple descriptive statistics such as the percentages, frequencies and tables. Historical trend analysis was also used to give patterns of change in AWIKS from one time period to another and divided the colonial period into major historical epochs during the colonial period. This involved a rational historical reconstruction of the past though criticism and evaluation of oral sources, archival records and content analysis of secondary written documents which was then

corroborated to ensure validity, reliability, and accuracy of the information. It was then classified according to their major themes, organized in a systematic and chronological manner within specific historical timeframe and social phenomena in which the event occurred. Data was finally interpreted within the Women and development theory which helped to present the history of Agikuyu women in food crop production using their indigenous knowledge system.

3.9 Ethical Consideration

i. A recommendation letter was obtained from Chuka University and research permit from the National Commission for Science, Technology and Innovation (NACOSTI) [Appendix III].

ii. Quality and integrity was upheld by seeking the consent of the participants, respecting the confidentiality of the research respondents, ensuring that the participants participated in the study voluntarily, avoiding harm to the participants and showing that the research was independent and impartial.

iii. To avoid plagiarism, academic fraud, misrepresentation of the results, conflict of interest and personal opinions, proper recording of the oral, archival and secondary information was done in an open-mind and honesty.

iv. The need for the research was disclosed and why the data was being collected, personal questions were not asked, confidentiality was maintained and to set out research process and accepted standards were adhered to.

CHAPTER FOUR
AWIKS ON FOOD CROP PRODUCTION IN PRE-COLONIAL SOUTHERN KIKUYULAND UP TO 1902

4.1 Introduction

Prior to European settlement in Southern Agikuyu land of Kiambu, the Agikuyu people relied on subsistence agricultural economy where tasks were organized on basis of sexes and both the Agikuyu men and women had extensive responsibilities. Kayatta (1965) explains that on one hand, Agikuyu men were basically responsible for clearing fields, cultivating certain perennial crops, tending cattle, erecting fences and security duties such as providing for and protecting the community, while on the other hand, the Agikuyu women were mainly responsible for producing labour intensive seasonal drought tolerant food crops, and undertaking domestic chores, which were performed daily or as seasonal routine in order to ensure enough food supply in their households.

Both men and women utilized their indigenous knowledge in farming practices properly as an effective way of reducing hunger in their households. Men and women had different ranges of indigenous knowledge and expertise in agricultural food crop production (Ashley, 2000). However, due to the intensive agricultural workload that required the Agikuyu women to be available throughout the agricultural seasonal calendar, they commanded detailed indigenous knowledge on seed selection, planting, weeding and crop protection, harvesting, storage and preservation of food crops. Through proper use of the indigenous knowledge systems on food crop production, they played a very important role in improving food crop productivity in order to increase food supply in their household and reduce hunger their community. This chapter explores the various AWIKS on food crop production prior to European colonialism in Kiambu County.

4.2 Historical background of the Agikuyu People

The Agikuyu people are Bantu speakers and their migrations movements and settlement in Southern Kikuyuland (Kiambu) has been documented as part of Bantu migration from Central Africa into the woodlands of Southern Sudan then across the Congo forest into Katanga region (Muriuki, 1974; Were & Wilson 1984). From Katanga, passed through Tanzania mainland, and later moved along the Coast to

Settle in Shungwaya. They then moved up to Tana River and settled around Mt. Kenya (Guthrie, 1967; Muriuki, 1974). However, it is also argued that they may have originated from Western Niger-Cameroon highlands, Nigeria and Benue Valley and later migrated to the Southern part of Africa before migrating northwards to East Africa where they split into two branches around 3000 BC (Vansina, 1990).

According to Guthrie (1967) the Agikuyu are classified geographically and culturally as Central Bantu speakers together with their neighboring communities such as the Akamba, Aembu and Ameru. Lambert (1956) provided the likely dates when the Agikuyu may have entered into their present land: Chuka 1300 AD, Embu 1425 AD, Fort Hall 1545 AD, Meru 1750 AD, Kiambu 1800 AD. He suggested that about 1300 the Chuka came up from Tana River and they were the first to arrive in the Mount Kenya area. They were followed by the Embu and the last group, the Agikuyu which seem to have arrived in Kiambu around 1800 AD.

Muriuki (1974) pointed out that by the 15th century, the Kikuyu together with the Chuka, Mbeere, Embu, Ndia and the Gicugu had consolidated themselves at Ithanga and Mbeere regions before the Kikuyu moved to the famous Mukurwe wa Gathanga in present-day Murang'a District which is considered the central point of dispersal of the Kikuyu into the rest of the plateau. A group went North and settled in *Gaki* (Nyeri) and another one to the South until it settled in *Karura* (Kiambu) while the other one remained and they continued to evolve to be a distinct group. The Agikuyu did not settle beyond Thika on the South East side of *Ol donyo Sabuk* because the area was generally dry and poor agricultural land inhabited by Kamba (Huxley, 1960). It is here at Karura (Kiambu) that the Kikuyu were thought to have taken agriculture as a way of life probably due to climatic suitability (Cagnolo, 1933; Muriuki 1974). According to Were & Wilson, (1984) the migration and settlement did not happen at once but it seem to have come in several waves and from different sources.

Cagnolo (1933) described the Agikuyu customs, their traditions and folklore before the coming of European in Kenya and stated that before the Agikuyu came into *Karura* (Kiambu), the land was occupied by hunters and gatherers whom they termed as *Asi/Athi* or *Dorobo* and *Agumba*. The *Asi* or *Dorobo* is a Maasai word

meaning “living on the wild animals and on wild honey” (Hobley, 1967). The *Agumba* were about 4 ft and 6 inch in height, they lived in the forests and dug caves. The *Dorobo* and *Agumba* did not cultivate anything or build permanent huts, they were hunter-gatherers who gathered wild food plants especially green leaves, fruits, nuts, tubers they also consumed wild game, honey, birds and insects (Cagnolo, 1933). The immigrants later assimilated some of these indigenous practices and some were lost. Indeed, the Agikuyu people incorporated some of these indigenous food gathering and hunting practices to their earliest food crop agricultural practices, they also came up with their own specific and localized indigenous knowledge through experimentation and observation of the environment around them (Eliot, 1910).

This indicated that some of the Agikuyu food crops such as maize, millet, sugarcane, arrowroot, yam and bananas did not originate from Kikuyu land but they got them from the aborigine communities like the Dorobo and Agumba, and others were introduced in 17th and 18th century by the Portuguese and other communities during the continuous trade contact with the Coast (Posnansky, 1975). However, it is important to note that the above-mentioned food crops were adapted by the Agikuyu people and were being produced in Kiambu prior to 1902. The Agikuyu women who were the custodian of food crop production during the pre-colonial period developed local indigenous knowledge and skills associated with seed selection, time for land preparation, planting, weeding, and harvesting in order to ensure sufficient availability of food in their households. Therefore, this study explored the Agikuyu women’s indigenous knowledge systems of the on food crop production prior to European colonialism in Kiambu County.

The study conducted 68 in-depth interviews and their respective question guides were filled. By the 68th interview all important themes, opinions and information that were to be uncovered in this study had reached data saturation and begun to be repetitive and it was unlikely that conducting more interviews would reveal new information. An overwhelming majority of the respondents were female at 41 (60.2%) as they are key holders of AWIKS on food crop production while the male registered 27 (39.7%) (Table 1). The age of the respondents was grouped into four categories; 65-70 years, 71-80 years, 81-90 years, and 90 years and above. Majority of respondents were aged

65-80 years of age while 90 years and above had the least numbers which can be attributed to life expectancy and memory loss (Table 1).

The majority age group 60-80 years can be attributed to the fact that they had most relevant information on the AWIKS since majority had interacted either directly or indirectly (their relatives) with those who lived prior to Europeans colonialism in Kenya and through this interaction the AWIKS was transmitted from one generation to another. Most of these respondents came from three Sub-Counties of Kiambu West (Limuru, Lari, and Kikuyu).

Table 1
Gender and Age Representation

Gender and Age	Frequency	Percent
Male	27	39.7
Female	41	60.2
Total interviews conducted	68	100
65-70 years	41	60.3
71-80 years	17	25
81-90 years	6	8.8
90 years and above	4	5.8
Interviews conducted	68	100

There was almost even distribution of respondents among the three Sub-Counties in the study area. Whereby, Kikuyu Sub-County led with 24 (35.2%) followed by Lari Sub-County at 22 (32.4%) and finally Limuru Sub-County with 19 (27.9%) and 4 (5.9%) of the respondents came from Githunguri Sub-County (Table 2). Majority of the respondents came from these three Sub-Counties that are in the Upper Highland zone which is highly fertile with plenty of rainfall for food crop production.

4.3 Agikuyu Settlement in Kiambu

By the 1880s, the Kikuyu of Kiambu were settling in the area between the Karura and Nairobi rivers, and also the Muguga region and continued to migrate slowly towards Nairobi but by the time Lugard established his fort at Dagoretti in 1890, they had not gone beyond Nairobi (Leacky, 2007). The land that was occupied by the Agikuyu was naturally (inelastic) in an agricultural sense; On the South-East it is bounded by lava covered plain unsuitable for crops, to the west it was hemmed in by arid grazing area that composed many volcanic dust and to the North it rises to a forest covered

mountain Aberdare ridge too high to support crops (Muriuki, 1974). It was observed that the Agikuyu people did not get the land in Kiambu by inheritance or by armed force but through peaceful penetration as individuals or as small bands of individuals united only by family ties.

Table 2
Location of the Study

Sub-County	Frequency	Percent
Limuru	19	27.9
Lari	22	32.4
Kikuyu	24	35.2
Others (Githunguri)	4	5.9
Interview conducted	68	100.0

They acquired the land from the *Athi* or *Dorobo* and *Agumba* people through negotiation and in exchange for goats, grains, yams, and bananas, and by establishing friendship with them they were given the land and also received the right of cultivation (Routledge & Katherine, 1910; Muriuki, 1974, Josphat Waikwa, O.I 2017). Kenyatta (1965) also stated that henceforth the chief economic occupation among the Agikuyu was agricultural production, both the rearing of livestock and subsistence food crop production. Therefore, land became the basic foundation of Agikuyu's economy through which agriculture contributed the largest share and it was considered as the 'mother' of the society.

The Agikuyu traditional land tenure system was based on the extended family or lineage- *Mbari* and each family (man and his wife or wives) had its piece of land. Land was a major means of production among the Kikuyu and an important source of livelihood for them. However, the written sources indicated that there was also individual acquisition and ownership of land through exchange, and also one could become client to the patron (Landowner) such as patron/client relationship in which an in-law *(muthoni)* could give a landless son in-law a piece of land to cultivate (Lambert, 1965; Leakey, 2007). Land was also acquired by transfer or by force if a particular *Mbari* was unable or unwilling to pay a debt. The Kikuyu land tenure system was, therefore, complex and dynamic (Muriuki, 1974). This study established how the land was owned and used during the Agikuyu traditional set up. According to the respondents, land ownership was grouped into three categories; communal land,

sub-clan holdings and others and it was observed that land ownership during the traditional set up was through sub-clan holding (Table 3).

Table 3
Response on Land Ownership and Main Land Uses Prior To 1902

Land ownership	Frequency	Percent
Communal land	2	2.9
Sub-clan holdings (Mbari)	66	97.1
Total interviews conducted	68	100
Main land uses	Frequency	Percent
Communal land	66	97.1
Unoccupied forest	64	94.1
Garden plots	60	88.2
Grazing land	38	55.9
Land for religious purpose	40	58.8
Interviews conducted	68	100

Additionally, respondents stated that prior to 1902 land was allocated for the following major uses; communal land, unoccupied forest or land with trees, garden plots, grazing mostly by the Maasai community and land that was set aside for religious purposes such as shrine and grave sites as shown in the above table 3. This was in corroboration with written sources (Lambert, 1965; Kenyatta, 1965) that stated that there was spaces used for planting crops by any member of the family men's, women and others spaces for private farming by either the women or men. A family group with enough land to cultivate was considered as self-supporting in the subsistence economic unit. The group worked harmoniously with a view to satisfy their immediate needs and accumulate wealth In addition all the respondents observed that before 1902, Agikuyu men had both rights to own and use the land but women had only the right to use it for food crop production.

The above observation meant that land ownership rights were not equal for both men and women which may be attributed to the fact that the land was owned by the sub-clans was founded upon male headed family units. However, although the Agikuyu women did not have the right to own land, they had certain important economic power and influence in the family and the right to access and use that land (Davison, 1988). Musalia (2010) also stated that the Agikuyu women had rights to use land allocated to their husbands or an individual male. They also had significant control

over food crop production and proper use indigenous knowledge and skills on food crop production such as observation of weather, seed selection, planting, weeding, harvesting and trading. It's however important to note that most women who were married by men became part of the husband's family and hence they had a right to use the land.

To this extent, women influenced greatly the amount of food supplies in their house hold. The respondents' findings corroborated with those of Sandgren (1976) who stated that it was on this land that both men and women worked together to produce food crops necessary for household food supply, and that there was a clear division of food production roles between sexes and age groups such that each member of the family unit knew perfectly well the task they were required to perform. Men were basically responsible for clearing fields, tending cattle, erecting fences and security duties such as providing for and protecting the community. Women were responsible for various activities in seasonal food crop production such as seed selection, planting, weeding, harvesting, and domestic chores.

4.4 Gendered Food Crops production by the Agikuyu Prior to 1902

In the traditional Agikuyu set up, there were also men and women's crops (Musalia, 2010). It was observed by 57 (83.8) of the respondents that men and women grew different crops and nine (13.2%) said some crops were grown by both men and women while two (2.9) of the respondents said that they did not have any idea which gender planted which crops (Table 4). Respondents stated that women grew varieties of millet, sorghum, Agikuyu traditional maize, beans and vegetable, while the male counterparts grew cassava, sugar cane, yams, tobacco, arrow roots and sweet potatoes and bananas. The main food crops farmed by the Agikuyu in Kiambu during the precolonial period were grouped into four categories; cereals, legumes, root crops, vegetables and fruits, beverages and stimulus. Similarly, Tignor (1976) and Musalia (2010) corroborated with respondents as they pointed out that indeed the Agikuyu traditional food crop production was gendered, on one hand women were responsible for seasonal foods crops *(irio cia Kimera)* such as millet, sorghum, legumes (beans, cowpeas, green grams), vegetables, fruits and others which were labour intensive and required special skills. Men on the other hand cultivated certain perennial crops *(irio cia menja)* like bananas, sugarcane, yams and cassava, pumpkins, and gourds.

Table 4
Response on Growth of different crops by Men and Women

	Frequency	Percentage
Yes	57	83.8
Both	9	13.2
No idea	2	2.9
Interviews conducted	68	100

In the detailed historical description of the social structure of the Agikuyu community, Hobley (1967) & Leakey (2007) agree with the respondents' view as they pointed out that the Agikuyu people grew a variety of African traditions food crops: cereals such as maize *(mbembe ya githigo, Nyamukuru, Nyamuthaka, Njeru),* the varieties were small combed and quick to mature. Sorghum *(muhia),* Bulrush millet *(mwere),* foxtail millet *(mukombi),* finger millet *(mugimbi),* legumes such as lablab bean *(njahi),* pigeon or bush pea *(Njugu),* cowpeas *(thoroko),* green gram *(ndegu/Ngina),* navy bean *(Noe),* kidney bean *(mboco)*; Tubers and root crops such as sweet potatoes *(Ngwaci),* yam *(Gikwa),* arrowroot *(Nduma),* cassava *(mwanga)* they also planted pumpkins *(marenge),*and gourd. Some of these crops and others provided form of green leaves vegetables *(nyeni)* in such edible vegetables were like *terere* (Amawanrthus), *togotia* (Erucrastrumarabicum), *kigerema* (coccinea trilobata), *thabai* (stinging nettle leaves), and *managu* (solanum nigrum). Additionally, they had edible fruits varieties such as *Ngawa, Matuya* (yellow mulberry), *Ndare (*black berries), *Nathi, Thigio* and *marigu ma Gikuyu* (bananas).

During this study, it was observed that most of these food crops were drought torelant and they were regarded as the principle source of food in the households and Agikuyu woman used them to provide enough food supply in their family (Margaret Wanjiru, O.I 2017; Muthongu Mbiyu, O.I 2017). In most cases, the agricultural food production that was mainly done by women was used to rate the family wealth status and the husband's influence in the society. They therefore commanded detailed indigenous knowledge about the production of such food crops in order to reduce the risk of food crop failure and provide the community with variety of food from different ecology zones. This gave the Agikuyu women some degree of negotiation that integrated them into the Agikuyu traditional political economies of their societies as active production actors (Kenyatta, 1965; Ahlberg 1990). Additionally, Middleton

(1953) reported that according to the Agikuyu custom no man would dare to indulge in women's domestic activities except in a case of emergency. This division of labour by gender probably meant that the Agikuyu women enjoyed a reasonable amount of independence economically.

4.5The AWIKS on Food Crop Production

The clear division of agricultural roles and land use patterns on food crop production meant that within the traditional subsistence economy both men and women had range of knowledge and expertise in their specific roles in agricultural production. The division of labour by gender means that men and women were available at different times of agricultural production (Ashley, 2000). Given that the Agikuyu women had immense responsibility in food crop production and subsequent food supply in the household, they therefore commanded detailed indigenous knowledge about production of various seasonal food crops. They learnt to adapt to climate seasonal variation, seed selection, various methods to minimize weed and erosion and to maintain soil fertility using indigenous knowledge systems. This probably made Agikuyu women to develop extensive knowledge and skills in weather observation, interpreting the climate and weather change, seed selection, knowledge in soil management, farming practices, crop protection and strategies of food crop preservation. Therefore, they played an important role in ensuring enough food supply in their household, to improve their livelihoods and to develop their community.

4.5.1 AWIKS in Observing Weather Change

As local communities went through a series of bad weather situations in the past they acquired some experiences and came up with homegrown methods to address these challenges (Mafongoya & Ajayi, 2017). The Agikuyu women developed vast local indigenous knowledge systems in observing weather change in order to prepare for planting food crops, the indigenous farming methods they used to ensure good yield of food crop, indigenous knowledge and skills on how and when to harvest food crops, knowledge systems that they used to store and preserve food crops to ensure enough food supply in their families. They also used the skills and knowledge on food crop production in other aspects of social and economic organization in order to sustain food production in their homestead. The study observed that the Agikuyu women identified use of either one or more local indicators of weather change that

were used on forecasting the onset of rainfall. Wind patterns, movement of cloud and position of stars and change of moon's cycle were cited by majority of the respondents at 61 (89.7%), 62 (91.2%) and 61 (89.2%) respectively (Table 5).

The respondents identified the appearance of thick white-grey cloud which slowly changed into dark-grey colour on the sky of Aberdare ridges horizon, the cloud then slowly moves towards Mount Longonot, when the cloud from Aberdare ridges and Mt. Longonot meets, it was an indication that it would rain very soon. They also identified the appearance of a cluster of stars that was observed on the sky horizon at sunset at 7 pm in October (*mweri wa Kihu gia keri*) as an indication of onset of short rains. Chang'a at el. (2010) corroborates with the above observations as they elaborate on the use of celestial bodies to predict the upcoming of rainy season by Malunga farmers of Tanzania. They point out that signs of these celestial bodies denote a good or a bad season, for example they give the scientific logic that if the horn of the moon crescent points downwards rainfall should be expected within few days but if it points upwards, it holds the rain. The full moon is usually associated with low chances of rainfall. Respondents 48 (70.6%) revealed critical indicator such as movements of flocks of black birds such as sparrows (*thungururu)*and crying eagle (*githima mburi)*, white butterflies flying around the sky, many dragon flies on the ground and the appearances of frogs, ants and worms as a signal it could very soon rain (Table 5).

According to Koistinen (2002), the migration of certain birds' species is associated with change of season in terms of temperatures and rainfall. Indeed, Koistinen observed that the indigenous knowledge of the mushrooming of ants on the soil was related to scientific reasoning that when daily temperatures are warm enough, the ants come out from hibernation and roam around on the soil. Agikuyu women observed the cow calves jumping around happily in the field and on the way home from grazing. It is noted that scientifically cow calves are very sensitive to low pressure systems, high humidity or changes in temperatures and therefore when farmers' observe such indication they should start preparing the land with anticipation of good rains (Zuma *et al.*, 2013).

Table 5
Response on AWIKS on Observing Weather and climate Change

Indigenous Knowledge (IK) Indicator	Frequency	Percent
Wind patterns	61	89.7
Movement of cloud	62	91.2
Position of cluster of stars and moon's cycle	61	89.7
Appearances of frogs, ants and other insects	48	70.6
Movements of birds and behavior of calves	48	70.6
Plants shedding leaves or emerging of new leaves	47	69.1
Interviews conducted	68	100.0

*Migaa (*acacia trees) shedding leaves in this area was mentioned by 47 (69.1%) of respondents as an indicator of rains coming soon. Residents of Karai-Kikuyu and Ndeiya-Limuru mentioned that indigenous women observed plants shedding leaves and flowers as a commencement of dry season and when the new leaves starts to emerge towards the end of the dry season, was an indication of long rains coming soon (Table 5). The emerging and growth of new leaves from different types of trees were a good indication that temperatures are increasing and the winter is over (Berkes, 2009).

Indeed, by observing such indicators, the Agikuyu women had a masterly of indigenous knowledge of such indicators and variation of weather conditions. This in return helped them to come up with an elaborate seasonal calendar which enabled them to know when to prepare land for planting, which crops to plant on long or short rains, when to weed and/or harvest. They also knew which rain season was sufficient enough for sustaining the growth of various crops to maturity. Cagnolo (1933) & Hobley (1967) reported that basing on observed changing weather patterns, the Agikuyu women devised seasonal and lunar calendar for crop production activities. Knowledge of local calendar often provided important information about local farming systems. Women used the word *"kimera or mwaka"* which is now applied to the English word "year" to mean a period from one rainy season to another, which is usually about six month each year in English. Pauline Wangari from Githunguri explained that;

> "There were two planting seasons "*Miaka* (pl)", one was the *kimera kia njahi* to mean a season when lablab bean *(njahi)* was planted and the other one was *kimera kia mwere* a season when Bulrush millet *(mwere)* was grown. Each season *(kimera)* had divisions roughly corresponding to 20 to 30 days months." (Margaret Wangari O.I, 2017)

These divisions are the month of *Mugaa*-January, *Muratho* -February, *Kihu* (beginning of the *njahi* season) March, *Muringo*-April, *Mugiranjara*-May, *Muthaatu*-June, *Gathano*-July, *Muoria Nyoni* also call *Mwania thenge*-August, *Mugaa wa keri*-September, *Kihu gia keri* Octomber (beginning of the Bulrush millet *mwere* season), *Kanyuahungu*-November, *Gatumu*-December (Lambert,1965). Taylor (1970) pointed out that by using this local calendar the Agikuyu women came up with four seasons which complises of two major planting season and two harvests in a year. *Mbura ya njahi* -the season of long rain for planting lablab bean, from March to July, *magetha ma njahi* the season for harvesting the lablab beans, *mbura ya mwere* short rain season for growing millet and *magetha ma mwere* the season of harvesting Bulrush millet. According to Musembi & Cheruiyot (2016), farmers used indigenous knowledge in weather forecasting to take deliberate actions in time planning for different farm activities in various seasons because the indigenous knowledge indicators were reliable and they helped to improve crop productivity.

Therefore, Agikuyu women had very special indigenous knowledge systems on interpretation of climate variability and prediction that helped them to know when to plant, when to weed and when to harvest. This sustained the food crops to maturity and therefore it resulted to increased food crop production in their farms and it also improved food supply in their households. Therefore, such Agikuyu women's distinctive knowledge, skills may be recognized as the backbone of food crop production. Zuma *et al.* (2013) also came up with similar calendar of the months of the year and their role in weather forecasting for agricultural timing as used by Sotho and Zulu farmers in South-West Frees State of South Africa. This helped the farmers to make deliberate agricultural decisions according to traditional knowledge and understanding of their local weather conditions obtained through years of experience in order to reduce food crop failure.

4.5.2 AWKIS on Selection of Quality Seeds for Planting.

Most of the Agikuyu women knew that not all the food crops they harvested each season were good for planting. They had skills of identifying and sorting out good seed varieties of grains, cereals and root crops for planting and only used the best in order to get good yield and increase crop productivity. Majority of the respondents 65 (95%) observed that the Agikuyu women selected most of the seeds especially grains for planting based on their size, health, and texture, while 33 (48.5%) of respondents mentioned that the early matured and strong seeds were isolated from the rest to avoid people from eating them (Table 6).

In regard to this, Hobley (1967) & Leacky (2007) reported that cereals and grains were selected during the harvesting or soon after they were harvested either at home or in the field during harvesting, women used their indigenous skills to identify the best (healthiest) grains such as maize, beans, legumes and they were set aside for seed, the damaged (spoiled by insect, rotten or moldy) or broken ones were not suitable for seed selection. According to a report by Gaia Foundation & the African Biodiversity Network (1915), the traditional knowledge of seed selection also required a deep understanding of how to store their different varieties of seeds safely from one season to another. It also required deep and subtle capacity to read the wider ecosystem and therefore women had to determine which seeds they have would do best in conditions they predict are about to unfold.

Furthermore, 58 (85.2%) of the respondents viewed that the Agikuyu women determined the moisture content of the maize and beans by biting the seed with teeth or by pinching it with fingers and if it was soft it was too moist and not suitable for planting. Nine (13.2%) of the respondents said that women observed the colour of the grain and selected the best well dried and not discolored or faded ones while two (2.9%) respondents mentioned that women also selected seed from healthy standing food crops prior to harvesting and for early maturity by marking the plants that flowered first during flowering period and also identified the healthy splits of sweet potatoes that were suitable for planting (Table 6).

Table 6
Indigenous Knowledge Indicators of Quality Seed Variety

IK indicators of good seed	Frequency	Percentage
Observe the Size, health and texture	60	88.2
Biting or pinching	58	85.2
Color observation	9	13.2
Maturity and strength	33	48.5
Early flowering & maturity in garden	2	2.9
Interviews conducted	68	100

The selection of seeds was done after winnowing which was done to separate the seeds for planting and grain crops for consumption and to remove chaff, dust and other rubbish from the best grains. Cagnolo (1933) indicated that winnowing was mostly done by elderly women who were well versed in indigenous knowledge systems and also because it does not demand a lot of energy. They spent the whole day selecting seeds while winnowing and physically picking out under-sized and off coloured grains, sand and small stones to clean, sieving was also done to separate main grains and weed. This is because the selection role did not demand a lot of energy though time consuming and it was found to be time and labour cost-effective (Mukoni & Matsa 2013). Hanna Kanyuira one of the elderly women at Limuru pointed out that;

> "Most of the work of selecting good seeds for planting was done by the Agikuyu women who were believed to be more careful than men and also because they had special indigenous skills and knowledge on food crop production which they had learnt previous generations". (Hannah Kanyuira, O.I 2017)

Indeed, Hosken (2013) pointed out that women are excellent observers and they have many reasons in mind when selecting seeds. Women's selection of good seed is not only for ensuring good harvest or increased yield but also to meet the diverse needs of the family such as the taste, nutritional quality, for short and long term growing periods, for animal fodder, building materials, medicine, ceremonies and for marketability. Hence, their role in use of indigenous knowledge system on food crop production ensured better yield and enough availability of food in their household. The Agikuyu women were carefully winnowing grains using the winnowing basket in an open space *(Nja)* at the centre of homestead (Plate 1).

Plate 1: Agikuyu woman demonstates how debris were separated from healthy seeds in preparation for planting through careful winnowing at Thingira cultural centre on 3rd February, 2019

4.5.3 The AWIKS on Farming Practices for Food Crop Production

When the Agikuyu people were slowly settling in the pre-colonial period Kiambu, was almost covered with forest and patches of grassland. Then they were given permission by the *Ndorobo* to occupy the land, men cleared the bushes heaping bush wood along its length and burning them (Hobley, 1965). They then broke the land, separated the soil from tangled roots, and then the trash was piled and burned and the other work was done by women. Each year this process was repeated until sufficient land had been brought under cultivation.

Majority of the respondents identify the indigenous fallow farming, shifting cultivating and intercropping as the major indigenous farming systems that were used by the Agikuyu women. Sixty one (89.7%) and sixty two (91.2%) of the respondents identified indigenous fallow systems and shifting cultivation as common farming methods that were used by the traditional Agikuyu women as deliberate natural resource management systems. The respondents mentioned that in many instances exhausted fields was left fallow for two to five years to help the soil regain its fertility. During fallowing period, cattle, sheep and goats were grazed in that field and that their droppings added to soil fertility. Fallowing enabled the Agikuyu women to improve on their food crop production through the natural process of soil

regeneration. In addition, 61 (89.7%) of the respondents stated that intercropping especially of maize and beans was commonly used by the Agikuyu women. They cited that the method helped to reduce exposure of the food crop farms to sun heating and hence preserve moisture. Forty eight (48) respondents representing 70.6% mentioned that mixed cropping was also used, where women planted more than two food crops at the same time and the sowing of seeds was done haphazardly and simultaneously by hand in the same field (Table 7). According to Miguel & Parviz (2008) & Rankoana (2016), intercropping and mixed cropping maximized the growth of all crops at the same time in the same field and allowed cropping system to reuse their own stored nutrients.

Respondents also stated that this system also increased the productivity of land and improved yield since it provided food crop diversity and a range of output. Also the succession of plant growth provided cover during heavy rains when leaves of crops protect the soil (Pauline Wangari, O.I 2017; Wambui Muthanga, O.I 2017).

Table 7
Indigenous Knowledge System for Farming Practices and Techniques

Indigenous Knowledge	Frequency	Percent
Fallow farming	61	89.7
Crop rotation & Shifting cultivating	62	91.2
Intercropping	61	89.7
Mixing cropping	48	70.6
Soil moisture protection and fertilization	55	80.9
Use of crop protection skills	60	88.2
Farming hand tools	67	98.5
Use of seasonal calendar	64	94.1
Total interview conducted	68	100.0

In addition, 55 (80.9%) of the respondents agreed that the indigenous women protected the soil from erosion. For example, some crops like sugarcanes were planted on sloppy grounds and cover crops such as sweet potatoes, and cereals to prevent soil erosion. They also mentioned that the burning bushes was used as a way of adding nutrients to the soil and this was well suited for soil with insufficient nutrients. (Olatokun & Ayanbode (2008) observed that these were deliberate natural resource management systems which followed the natural Agikuyu calendar cycle. Kenyatta

(1965) stated that man with the help of his family would arrange with two or three others to come and work with him in the digging or breaking the land into sods together *(ngwatio system)*.

Meanwhile, the women worked on the sods behind the men with their knives and short digging stick to harrow *(Kuhukuria)* them or breaking them up, shook out the roots of the grass and bushes and put these into piles for burning. Respondents (Josphat Waikwa O.I 2017; Peter Njoroge, O.I 2017; Gladys Nyambura, O.I 2017) specifically pointed out that the traditional harrowing skill was important in adding soil fertility and to minimize the growth of weed in the field. Women used this knowledge and skill because they knew that if roots or little bits of grass were left in the soil, they would soon grow again and compete for nutrients and water with their planted food crops resulting to low crop yield. They also mentioned that during the planting of food crops, the Agikuyu women used organic manure from the domestic animals (cattle, sheep, goats, chicken etc) to increase soil nutrients which facilitated the growth of the food crops.

Additionally, 60 (88.2 %) of the respondents also added that women used various indigenous knowledge system to protect the food crop, they used ash to control pest from destroying food crops in the farm while women and children were responsible for chasing away birds from eating and destroying the food crops. Also according to 67 (98.5%) of the respondents the Agikuyu agricultural farming tools were rudimentary. In preparation for planting men used their cultivating knives *(hiu cia mengere)* and axes to clear the bush wood and bigger trees ready for burning (Table 7). With regard to protecting of food crops in the field, Cagnolo (1933) stated that millet required a lot of vigilance after it flowered so a wooden stand *(Gitara)* was constructed in the millet field where boys and girls could scare away the bird from using slings and shouts. Sometimes they used to make scare-masks which were put in the farm to make noise and scare the birds away. Leakey (2007) also stated that sometimes the Agikuyu people used to protect their crops from thieves by calling in the aid of blacksmith *(muturi)* who brought with him an old clay bellow nozzle *(ngerua)*, a method that was particularly used to protect sugarcane field since they were not visited regularly by the owners. Indeed, minimizing the loss of food crops

such as cereals could be one resource efficient way that could help in strengthening food security and combating hunger (Kumar & Kalita, 2017).

Furthermore, Huxley (1967) gave a detailed description of the farming implements that were used by the traditional Agikuyu women. She observed that when a sufficient larger area of forest had been cleared, the field was immediately ready for breaking using a big digging stick called *Munyago*, this was a long pole sharpened to a point at one end. It was about 6 ft long and 2 inch diameter of a hardwood such as *muhugu, mutamaiyu, mugucwa or mutikani* (Erastus Muraya, O.I 2017; Leacky, 2007) the cleared area was land that had been allowed to fallow and return to bush, such land usually took long to prepare Maize, Labla bean, cowpeas, sorghum and beans were normally planted using a short digging stick *(muro).* Women had root-digging sticks to dig root crops and carrying bags *(Ciondo)* and large hand woven baskets *(Nyamikwa)* to carry them (Kago, 1954).

Respondents (Josphat Waikwa, 2017; Margaret Wangari, O.I 2017; Agnes Watetu, O.I 2017) specifically mentioned that weeding was done by women using their knives and short digging stick *(muro)* and they had a lot of weeding indigenous knowledge and skills. After planting, when the crops were about four weeks old, weeding commenced. Women carefully removed weeds by hand or hand-hoe to avoid breaking them and to reduce moisture competition with the weed. Olatokum & Ayanbode (2008) reported that the women's indigenous knowledge on use of hand-hoe was very essential because farming with it gave the farmers detailed knowledge of soil characteristic and behavior and they were able to determine crop suitability. For example, light sandy soil could not stick on the hand-hoe was suitable for planting drought tolerant crops such as sorghum, millet and cassava.

The respondents also revealed that Agikuyu women used previous harvest residue in the form of maize stalks, dried bean husks for mulching food crops in the farm, as it was good soil stabilizer. The residue is tilled with the soil to improve moisture retention, fertility of the soil and reducing weed growth and enhancing the appearance of the farm. According to Ajibade (1999), mulching conserved the soil moisture and simultaneously kept the soil cool. It provided the soil with favorable conditions in initial stages of crop germination and seedling. Respondents also held a strong believe

that the women's indigenous knowledge of application of animal manure on their farm helped to add farm nutrients and replenish soil fertility in order to increase crop productivity. Just like the Agikuyu women, the farmers of Emuhaya in Vihiga District were well aware of indigenous use of farmyard manure in the fertilization of crop yield and fixation of nitrogen by bacteria that exists in the roots and nodules of legumes such as beans (Otwoma, 2004).

In addition, 64 (94.1%) of the respondents observed that the Agikuyu women had an elaborate indigenous knowledge on seasonal calendar which they had mastered through local observation of weather, soil suitability (Table 7). They had knowledge on when it was suitable to plant a certain food crop depending on the amount of rain available during that season. Some respondents specifically stated that the Agikuyu women planted most of traditional food crop cereals and legumes during short rains because they knew from experience that if planting was done during long rains they would be fully mature before the onset of dry season and they could rot before they are harvested, which may resulte to low yield and decrease in food supply in the household (Muthongu Mbiyu O.I 2017; Eunice Gitau, O.I 2017; Waithaka Njuguna, O.I 2017). This corroborates with Musalia (2010) observation that women planted sorghum *(muhia)* only at the beginning of long rains and it did not mature until after the short rains were over and it was harvested at the same time with varieties of millet, although it was planted 10 months before.

Both foxtail *(mokombi)* and finger millet *(ugimbi)* were planted during short rains through broadcasting method or by scattering the seed over the ground and then digging the ground so as to turn the seed into the soil, this required large piece of land for one to get good harvest. Wambui Kungu (O.I, 2017) observe that bulrush millet *(mwere)* was planted in the lower field of the land during the short rains and dried immediately on the onset of the dry season. According to Kumar & Kalita (2017), reducing pre-harvest losses of grains crops may help to strengthen food security in developing countries.

Agnes Wateto O.I (2017); Ndegwa Muhoro, O.I (2017) and Cecilia Nduta O.I (2017) specifically mentioned that lablab bean *(Njahi)* was planted in special plots set aside especially for the old men which had been devoted exclusively to millet in the short

rain. Leakey (2007) added that women also planted a few lablab bean *(njahi)* seed in maize crop plot those mixed with the other crops. Those that were planted among other crops were not uprooted at the time of harvest before the short rain, but they were cut down near the ground and the stem were left to regenerate during the short rains to regenerate leaves that were used as edible green vegetables.

4.5.5 AWIKS on Food Crop Harvesting, Storage and Preservation

The study established that the Agikuyu women had special knowledge and skills on harvesting, storage and preservation of food crops. Sixty five (95.5%) of the respondents pointed out that women observed the changing of colour of leaves for the cereals such as beans, drying leaves and stem. Sixty one (91.2%) of the respondents mentioned that the bending of stem such as in bananas and drying up of maize milky liquid inside and silks also signaled food crop maturity. Further,41 (60.2%) of the respondents stated that in cases of sweet potatoes, women observed the cracking of ground where sweet potatoes are planted whereas protruding on the ground for arrow roots pointed at it readiness for harvest.

Further, the respondents also identified special indigenous knowledge that the Agikuyu women used to store and preserve food crops to ensure enough food supply in their families. The methods identified by 61 (89.7%) of the respondents included sun drying for vegetables and cereals. In addition 56 (82.3%) said that there was smoking for millets and sorghum after dying by hanging in kitchen smoke which produced bitter taste that prevented insects attack. Further, 44 (64.7%) mentioned that mixing with ashes incase of pumpkins, leaving dried cow peas with covers stored in clay pots and drums and putting them in a well ventilated granary (Table 8). Kumar & Kalita (2017) reported that too early harvest of food crops with high moisture content increases the loss of grain since they become vulnerable to mold growth and insect infestation resulting in high amount of broken grains and low yields. Also leaving the matured crop unharvested for long exposed them to birds and rodents attack resulting to high food crop losses.

The seed preservation was easier compared to preservation of grain crops for food consumption because the amounts preserved and stored as seeds were smaller compared to crop yields for food, therefore very little time and labor was required.

Seeds were also preserved by sun drying, smoke coating and leaving variety of beans with outer covers. Millet and sorghum were simply hanged in kitchen ceiling for smoke coating (Mukoni & Masta, 2013). Maize, millet and sorghum dried, tied, hanged and smoke coated inside kitchen's ceiling until the next planting season. Women knew that smoke soot produced a bitter taste which deters the attack by pests and rodents (Routledge & Katherine, 1910).

These special indigenous knowledge systems that the Agikuyu women used to store and preserve food crops were learnt from their grandmothers by observing and following what they used to do.

Table 8
Indigenous knowledge on Harvesting, Storage and Preservation of Food Crops

IK and skills on plant ready for harvest	Frequency	Percent
Change of plant color	65	95.5
Bending of crops	62	91.2
Cracking of ground	41	60.2
Total interview conducted	68	100
IK and skills on storage, preservation and preparation	Frequency	Percent
Sun drying	61	89.7
Mixing with ash	56	82.3
Smoking	44	64.7
Salting	36	52.9
Storage in granary, pots, drum and baskets	46	67.6
Preparing food grains through pounding and grinding floor	31	45.6
Interview conducted	68	100

Muturi Gatheca O.I (2017) and Wamoro wa Nderi O.I (2017) stated that most cereals and legumes such as millet *(mwere and mukombi),* pigeon pea *(njugu)* cow pea *(thoroko),* lablab bean *(Njahi,* Kidney bean *(Mboco),* navy bean *(Noe,* maize *(mbembe)* underwent post-harvest air and sun drying. After that they were kept in various indigenous preparation and storage items in the Agikuyu homestead such as small gourd- *Nyanja,* carrying bag- *Kiondo,* winnowing tray- *Gitaruru,* Agikuyu cooking pot- *Nyungu ya irio,* large hand woven basket- *Nyamikwa,* Small pot- *Njuri,* Small tray- *Gitiri,* various sized calabashes – *Kiuga, Kiihuri, Giitiriri* (Plate 2).

Besides some of the grains were also treated with ash mixture which was sprinkled on sorghum, millet, maize, and thoroughly mixed it was also sprinkled on, the floor and outside of the granary in which the grain will be stored. This practice was based on the women's indigenous knowledge that the bitterness of the ash mixture kept pests, rats and weevils off from destroying the grain which enabled them remain for years until the next planting season.

Plate 2: Indigenous preparation and storage items used by Agikuyu women currently preserved at Thingira cultural center, Kirinyaga photos taken on 3rd February 2019

Respondents 46 (67%) indicated that other food crops such as Arum *(nduma)*, cassava *(mwanga)*, yam *(gikwa)*, sweet potato *(ngwaci)*, Bananas *(marigu)*, green pumpkin (*marenge*) were kept in shades under granary's shelves or with storge items such as carrying bags *(ciondo) and gitaruru* (tray) outside the kitchen *(githaku)* because they were for immediate use (Table 8). The Agikuyu women knew that if root and tuber crops were exposed to the sun for long, they would be damaged by sunburn *(kurota)* and become unfit for human consumption (Teresia Waithera, O.I 2017, Agnes Watetu, O.I 2017).

Varieties of fruits *such as Matuya* (yellow mulbery) and *marigu ma gikuyu* (bananas) were kept in baskets and placed on upper shelf where there was low temperatures and enough air circulation, this allowed the evaporated moisture to escape. Bananas were the principle fruits and every woman always kept some in her private store *(thegi)* (Kamenju, 2013). Other wild fruits such as berries (*ndare), ngawa, nathi, thigio* were gathered and consumed immediately and some were used by young boys to prepared natural fruit juice that was kept in small airtight pots to prevent bacteria damaging them. Agikuyu women also had indigenous skills of brewing or fermentation the fruits especially bananas for drinking. Some of the fruits were stored on granary shelves others were hanged on thread in a shelve with enough air circulation (Josphat Waikwa O.I 2017). Gathingira (1934) reported that vegetables freshness was also preserved by submerging them in water with high concentration of salt and those that were not for immediate use were sun dried to remove the moisture and enable to store them safely and easily hanged on the granary shelves in baskets and carrying bags.

Kamenju (2013) observed that every married women had at least one granary or as many as her food production capacity demanded. The granary *(Ikumbi)* was usually constructed at the entrance into the homestead in order in which the women were married. The storage granary was made using a number of methods of weaving grass into a porous basket or by use of hurdles-work of thin flexible rods of acacia *(Ndii)* [Plate 3].

Plate 3: Granary made of hurdles-work of thin bendable rods (Ikumbi ria Ndii) found constructed at in Josphat Waikwa's homestead at Kamangu-Kikuyu (top) photo taken on 22rd June 2017, and granary (bottom) made of woven grass into a porous basket, constructed at Thingira cultural center photo taken on 3rd February 2019.

It was well ventilated to protect them from harsh weather conditions. Josphat Waikwa (O.I, 1917) further noted that Agikuyu women also had knowledge of identifying the suitable site of a granary, for example, on top of rocks to be free from moisture. The top was roofed, with sealed doors and the inside treated. A granary stands out on

rocks of ½ a metre above the ground and strong logs laid as foundation to protect the structure from ground water while the thatched roof protects it from the rains. Other food crops and precious items were kept in a woman's personal food storage space *(Thegi)* [Plate 4] which was a corner space between women's sleeping space and goat area *(kweru)*, the food processing items were also placed there (Kamenju, 2013) [Plate 4]. Further food products were also stored in external area outside the granary (Plate 5)

Plate 4: Some treasured food stuff items kept in the interior of Agikuyu women's house private store (Thegi)[top] and food items (bottom)stored in the interior of the house

The food crop storage process was followed by food preparation, which happened in the external space outside the hut *(Nja)* [Plate 6]. According to 31 (45.6%) respondents, the pounding (*kuhura*) of grains using motar *(ndiri*) and pestle *(muthi)* and winnowing (*kuhuha)* was done outside the homestead *(Nja)* specifically by women in preparation for cooking (see Table 8). Each woman's mortar and pestle was stored under the roof space outside the house.

Plate 5: Extended external storage (Nja) preserved at Thingira cultural centerphoto taken on 3rd February 2019

Another important item was the gridding stone, which was used to make flour for porridge from gridding millet and sorghum and was available even during times of extreme famine (Kamenju, 2013). Food preparation using the Agikuyu cooking pot in the three stone hearth *(riiko)* was done by women (Leakey, 2007). The left over space at the corner was used to store cooked food, water gourd and other precious cooking items (Plate 6).

Plate 6: Agikuyu Woman winnowing maize (left), preparing millet floor using gridding stone (right) photos take on 3rd February 2019

Plate 7: Agikuyu woman poundering grains using mortar (ndiri) and pestle (muthi) (left), and in the kitchen hearth (riko) where food was pre-cooked (right) photos take on 3rd February 2019

4.5.6 Usefulness of the AWIKS on Food Crop Production in Various Social and Economic Activities

The Agikuyu women's had indigenous skills and knowledge on food crop production were used in other aspects of the community's social and economic activities to enhance supply of food. Religion played a key role in fostering traditional agricultural practices and preservation of environment. Sixty (88.2%) of the respondents mentioned that the AWIKS on food crop production was also useful in religious

ceremonies which entailed observing signs of weather and conducting religious ceremonies to appease rain, for example, Prisca Nyokambi mentioned that;

> "After the women observed the indicators of weather change, they advised the elders to organize a religious ceremony or sacrifices (*kuhoya mbura ya kimera*) and children's blessing ceremony *(ngoi cia ciana)*. A sacrificial goat was slaughtered under a fig tree *(mugomo)* and offered to Agikuyu God *(Mwene Nyaga)*" (Prisca Nyokabi, O.I 2018)

Moreover, 62 (89.7%) of the respondents also noted that the Agikuyu women used to observe food crop production calendar seasons to help them to know when to organize initiation ceremonies such as circumcision (Table 9). Due to the amount of merry making that was involved during circumcision ceremonies, these could take place during a season when there is plenty food for merry making. According the Kamenju (2013) the major ceremonies nd celebrations took place in January to March climatic season when millet was finalized and the weather was superb with no major work going on. Therefore, the Agikuyu women indigenous knowledge system on food crop production seasonal calendar influenced greatly the amount of food supplies during the circumcision ceremonies. Fifty (70.6%) of the respondents mentioned that woman's contributions in food crop production through use of their indigenous knowledge and skills determined the level of merry making during the marriage ceremonies (Table 9).

In addition, 62 (91.2%) of the respondents stated that women used their indigenous knowledge and skills to identify the best and healthy cereals, legumes and root crops that could be used for trade with other neighboring community's food products which were not available in Kiambu (Table 9). Muriuki (1974) made similar observation as he pointed out that the Agikuyu engaged in both market and long distance trade with the neighboring communities.

Table 9
AWIKS on Food Crop Production in various Social and Economic Activities

Social or Economic Activities	Frequency	Percent
Religious Ceremonies	60	88.2
Exchange System	62	91.2
Initiation Ceremonies	62	89.7
Marriage Ceremonies	50	70.6
Traditional Strategy to deal with shortage of food crop	37	54
Interviews conducted	68	100

The food crop exchange system with the neighboring communities probably provided quick means of overcoming long dry season or an earlier low harvest season. In addition, Routledge & Katheline (1968) reported that whenever there was a shortage of food in Agikuyuland, they bought grain from the Akamba in exchange for sheep, goats, cows, or ivory, and women also disposed of food crops they produced from their plots as gifts to relatives or in ceremonies without necessarily consulting the husband.

Additionally, 37 (54%) of the respondents mentioned that when the community faced shortage of supply of food crops in Kiambu, people migrated to areas that were more productive or some family members were sent to stay with their relatives until the food shortage was over (Table 9). Those who remained behind were forced by circumstances to adjust the diet and shared the little they had with relatives and neighbours as gifts. Hobley (1967) reported that during the period of food shortage the Agikuyu could also use relational networks through marriage to gain access to food surplus within a radius of about forty kilometers. Conventional marriage were contracted between groups settled in far areas not unusually neighborhood to the affected area. Therefore, this meant that through the use of indigenous knowledge and skills on food crop production, the Agikuyu women were able to ensure plenty of food availability during community's social ceremonies. This study recognizes women's role in ensuring sustainable availability of food in the households and in improving social and family cohesion through the use of AWIKS on food crop production.

4.6 Conclusion

From the foregoing discussion, it is clear that in the traditional setup, the Agikuyu women had huge responsibility in food crop production. Therefore, they commanded detailed indigenous knowledge systems on food crop production. They had indigenous knowledge on weather observation and prediction which in return helped them to come up with an elaborate seasonal calendar which enabled them to know when to prepare land for planting , when to weed and/or harvest. They had IK on selection of quality seeds, which enabled them to plant quality seeds and get better food crop yields. They also used a variety of indigenous farming methods such fallow farming, shifting cultivating, mix cropping and intercropping, traditional harrowing skill as the major indigenous farming skills. These methods added soil fertility, in soil moisture retention, to minimize the growth of weed in the field and maximized the growth of all crops at the same time in the same field. In addition, they had IKS on harvesting, storage and preservation of food crops such as observing the changing of colour of leaves for the cereals. They preserved food crops by drying on sun, mixing with ash, salting and store them in a well ventilated granaries.

Others were dried, tied, hanged and smoke coated inside kitchen's ceiling until the next planting season. This is a clear indication that in pre-colonial period, the Agikuyu people had their own indigenous knowledge systems on food crop production. It is possible that these indigenous knowledge systems helped Agikuyu women to increase food crop productivity in their farms and to improve food supply in their households. The proper use of the AWIKS on food crop could be viable option for improving food crop productivity in order to reduce the community's vulnerability to severe drought and famine.

CHAPTER FIVE

IMPLICATINONS OF COLONIAL POLICIES AND PRACTICES ON THE AWIKS ON FOOD CROP PRODUCTION, 1902-1963

5.1 Colonialism and The Awiks on Food Crop Production (1902-1918)

5.1.1 Introduction

The introduction of the colonial policies and practices in Kenya and its attempts to turn the country into a European protectorate resulted in fundamental changes in the Agikuyu Women's Indigenous Knowledge System. Primarily, Europeans introduced the cash crop economy, labour policies, Christianity and western Education which were aimed at achieving the colonial capitalist economic interests, the outcome was a considerable neglect of the Agikuyu traditional institutions. This Chapter examines how European colonialism affected the AWIKS on food crop production during the first years of establishment of colonial rule.

5.1.2 Introduction of Colonial Rule in Kiambu

In the late eighteenth century Christian missionaries, traders, and administrators spearheaded arrived in Kenya (KNA/D.C/KBU/3/8, 1890-1916). Through a series of agreements, which concluded the Berlin Conference of 1884-85, European spheres of influence were created in Africa under the principle of effective occupation of the territory mandated to the power. In order to safeguard her economic and political interest in East Africa, the British embarked on protective measures against other Europeans (Roland, 1963). Hence, through William MacKinnon, the British acquired a charter for the Imperial British East Africa trading company that was launched immediately to administer the British spheres of influence in East Africa (Bennett, 1963).

The British government later took over the administrative duties after the company became bankrupt in 1895, one of the main roles of the IBEAC was to execute the rule and policies of European government (KNA, MA1/16/37, 1903-1917). In 1895, the East Africa protectorate was officially established covering the territory from the Mombasa to Naivasha, which was the beginning of British rule that lasted for 60 years (Dilley, 1937). Soon after the British took over the East Africa Protectorate, they created a department of Agriculture. Until after the World War 1 nearly all of its activities were directed towards promoting settlers agriculture.

Following the signing of the Crown- Land policy into Law in 1902, the settlers were provided with 99 years lease and each settler was given 160 acres free of charge as an inducement to farm. This order allowed the government to sell and lease Land at 2 rupees for a hundred acres or rent it at 15 rupees for hundred acres (Bailey, 1993). There was a significant number of European settlers and the missionaries into the protectorate through the invitation extended by Sir Charles Eliot (Leys, 1975). Henceforth, the Agikuyu ownership of Land was not recognized, and the community was completely disinherited off their only means of food crop production. It also marked the European policy of supremacy that had significant implications on traditional economic activities particularly agricultural production. The first activities of the Agricultural department included to set up experimental agricultural and livestock-rearing farms to promote European farming (Waller, 2012).

Given the strategic location of the Kiambu area, the fertility of the soil for agriculture presented there, refreshing climatic conditions and hospitality of the Agikuyu community was of immense attraction to the Europeans (KNA/MAI/16/8, 1890-1916). The colonial government felt comfortable to established experimental agricultural estates in Kabete, Kikuyu and Limuru areas of Kiambu (Rosberg & Nottingham, 1966). When the Europeans arrived in Southern Kikuyuland, they found most of the land “vacant” because most of the Agikuyu people from Kiambu had migrated due to devastating famine, rinderpest and small pox epidemics (KNA/MA1/16/20, 1911-1912).

When asked whether they can recall when the Europeans arrived in Kiambu, 63 (92.6%) of the respondents said that they were not born by that time. Further 15 (22.1%) said that they were told by their fore fathers, relatives and friends that the Europeans arrived during the great famine *(Ngaragu ya Ruraya)*, While five (7.3%) respondents did not have any idea of when the Europeans arrived in Kiambu (Table, 10). This implies that the Agikuyu people probably seem to have arrived in Southern Kikuyuland in early 1900s.

The White Fathers, the Church Missionary Society and Church of Scotland Mission were the first to arrive and settled at Thogoto and Gikabura then they were followed by the administrators (Cagnolo, 1933). The process of establishment of the colonial

rule was on mutual understanding and in some cases by use of force. Fifty-five (80%) respondents observed that most of the white Europeans were friendly to the indigenous Agikuyu people on arrival and so they did not suspect any ill motive from them. Others 30 (44%) and 49 (72%) respondents reported that the Europeans perceived the Agikuyu people as inferior and different respectively and therefore they needed help (Table 10).

Table 10
Agikuyu People's view on the Coming of European

European arrival in Kiambu	Frequency	Percentage
Not born at that time	63	92.6
Were told it was during *"Ngaragu ya Ruraya"*	15	22.1
No idea	5	7.3
Total interviews conducted	68	100
European Perception	Frequency	Percent
Friendly	55	80
Inferior	30	44
Different	49	72
Interviews conducted	68	100

This means that when most of the Europeans arrived in Kiambu in the early 1900s, they found when the Agikuyu people were desperate because they were hit by natural disasters, diseases and other epidemics. Tignor (1976) stated that the Kikuyu people were rapidly colonized than the Kamba and the Maasai because the afforded the colonialists a significant level of collaboration as the poor people were vulnerable to colonial power. Therefore, that can be attributed to their willingness to welcome the foreigners and to give in to their demands. Therefore the colonial administrators took most of the unoccupied land and they felt more secure and comfortable to alienate the Land for Settlers' agriculture (Mackenzie, 1990).

Huxley (1968) confirms these claims by stating that the conditions in which the indigenous people were living by the time of European invasion in Kikuyuland were very harsh. The Kikuyu created a group of active Agikuyu leaders like Kinyanjui wa Gathirimu and Karuri wa Gakure who collaborated with the Europeans because they wanted to derive personal wealth and prestige. Through them, the British colonialism was established a new colonial economy and other policies were

established (Ndege, 2009). Indigenous communities thus found themselves displaced and deprived of their traditional livelihoods and of access to their natural environment arable lands and forest resources (Jacquelin-Andersen, 2018).

When Captain Lugard established a Fort at Dagoretti in 1890, he was welcomed by Waiyaki wa Hinga who was in charge of the area and the Agikuyu people supplied Lugard's men with food. However, when Wilson took over from Lugard, his soldiers began looting food and livestock from the Agikuyu who reacted by setting the Dagoretti Fort on fire (Eliot, 1910). However, it is important to note that it is not in all the areas in Kiambu where the Europeans were given a friendly welcome. There were some instances where at the initial stage European company's trading post and stations was attacked by armed resistance. Karanja Mbatia (O.I, 2017) states that "Although Waiyaki played a very significant role in the initial opening of the Kiambu to the British, he was later arrested and killed at Kimbezi by the British government."

Therefore, the European Missionaries and the settlers sympathized with the indigenous Agikuyu people as they perceived themselves as a solution to "civilizing" African "barbaric" traditions (Waller, 2012). Though the European portrayed indigenous knowledge system as static, it constantly changed, discovered and sometimes disappeared or became dormant (Mafongoya & Ajayi 2017). The missionaries came in the name of Christianity, Education, and healthcare and the three aspects were referred to as Education and Christianity (*githomo*). The white settlers and Christian missionaries were both oppressing African by alienating their land and exploiting their labour and therefore the Agikuyu people could not distinguish them because they were all white. The Missionaries in most cases followed their European national flag in their mission since they needed to have maximum protection. However, both Christian missionary and colonial administration worked together as an integral part of spreading western civilization and beliefs (KNA PC/CP/4/3/2, 1911). The colonial attitude of perceiving the natives in Kenya as inferior and ignorant is also illustrated by (Waller, 2012; Parsons, 2011).

After the Uganda Railway was completed in 1901, the British, through the then Commissioner Sir Charles Eliot realized that for the railway to be sustainable, they had to encourage more European settlement and production in the protectorate

(Eliot, 1910; Leys, 1973). Thus, the colonial government proceeded to institute various legislative measures that were aimed at legalizing the Europeans' acquisition of land. These ordinances included the Lands Order-in Council of 1901 and the Crown Lands Ordinance of 1902 (KNA/MA1/16/8, 1890-1916). These orders gave the protectorate government jurisdiction over all lands previously occupied by Africans. The Crown Lands Ordinance of 1902 gave the commissioner power to lease or sell land to settlers and defined the conditions of land alienation (Jayne & Jones, 1997).

Following the 1902 Crown-Land ordinance, a significant large scale European Settlement was encouraged to settle in Kiambu and that was a beginning of extensive interaction between the European Colonialists and the Agikuyu people. This also marked the beginning of European policy of supremacy and continuous transformation on the Agikuyu Indigenous Knowledge systems on food crop production mainly through land alienation, taxation and forced labour, and introduction of commercial cash crop farming.

5.1.3 Implications of Colonial Land Alienation on the AWIKS on Food Crop Production

Within the five years of the initial establishment of European settlement in Kiambu, the land tenure system was significantly altered (McGregor, 1927; Leys, 1973). The Agikuyu Land tenure system prior to 1902 was under the *githaka* system or the sub-clan holdings *(Mbari)* where each clan established ownership under a specified portion of land. However, the establishment of the European settlement in the Kiambu in 1902 meant that such communal sub-clan or *githaka* land tenure system would be disrupted. The traditional land ownership was significantly affected by the White settlement in the Kiambu

Sixty two (91%) respondents stated that when the white settlers settled in Kiambu the land was very scarcely cultivated and most of it was community's forest land where the neighboring Maasai community used to graze their cattle. Fifty (73.5%) mentioned that after the white men identified the fertile land, they immediately put a fence around that area enclosing it to make it their private property. In addition there were also small but an increasing class of Agikuyu people who consolidated the

Agikuyu landholdings and collaborated with the colonial administrators. Thirty two (47%) of the respondents mentioned that the Agikuyu people's traditional land use right was changed significantly because the Europeans fenced the land that was previously being used by the Agikuyu people for food crop production, grazing, land for community forest and for religious purpose (Table 11). They in turn slowly became tenants or squatters in the new European farms while others were confined into the reserves and therefore this significantly undermined the existing communal land ownership system.

Table 11
Effect of European Settlement on Traditional Land Ownership System

Effect on land ownership	Frequency	Percent
Land demarcation, fencing and Consolidation of Agikuyu landholdings	50	73.5
Change of traditional right to land use	32	47
Loss of their traditional fertile land	62	91
Interviews conducted	68	100

The settlers slowly demarcated the land, cut down some of the indigenous trees and bushes to build their houses and to pave way for a fertile piece of land to cultivate (Waller, 2012). The Agikuyu people and some of the Maasai pastoralists were pushed to the Northern side near Aberdare and Lari forests. Others were pushed to far edge of South-West land of Ndeiya which was a semi-arid plain covered by Lava and volcanic dust (KNA/MA1/7/12, 1903). This change in the traditional land occupation and land rights had serious effects on the Agikuyu indigenous food crop production systems particularly the AWIKS on food crop production. When the Agikuyu people were pushed to the Aberdare and Lari forest edge from the agricultural productive areas of Limuru and Kikuyu where colonial government established coffee and tea plantation. The marginal areas were too cold to support sufficient growth of the Agikuyu indigenous food crops production. The semi arid plain of Ndeiya and Karai area of Kikuyu had volcanic soil and rocks that were unsuitable for sustainable growth of their indigenous food crops and this may have led to neglect of some of the AWIKS in food crop production. Geographic variability in climate together with low levels of coping and adaptive capacity resulted in high levels of vulnerability for marginalized subsistence farmers (Biggs *et al*. 2018)

In line with the respondents' observations, Elkins (2005) pointed out that many Europeans especially the settlers wanted to farm in Kiambu because the land was ideal for coffee growing. They initially acquired 640 acres of the land per person as it was provided for in the Crown Land policy of 1902 but this was soon expanded to 1,000 acres of land per person while some acquired more land using the names of their children, wives and other relatives. It is estimated that between 1903 and 1905, about 60,000 acres of land were alienated in Kiambu-Limuru area displacing approximately 11,000 people, while Kanogo observed that following the crown-land ordinance of 1902, by July 1910, there were 11,647 Kikuyu on Kiambu settler farms as squatters and that majority of these Squatters were the original owners. Some of the land was alienated for the missionaries as well as for use by the government (Sorrenson, 1967; Kanogo, 1993). Furthermore, Overton (1987) reported that by 1920, three (3) million hectares had been alienated to the whites and another 1.3 million hectares taken as forest resource. African Natives were separated from their indigenous productive land resulting to social disintegration due to large-scale migration and resettlement of the Natives (Alila, 1977). Thus, they found themselves displaced and deprived of their traditional livelihoods and of access to their natural environment arable lands and forest resources (Jacquelin-Andersen, 2018).

Consequently, many Africans especially the Agikuyu of Kiambu had to vacate their traditional land and look elsewhere for a source of livelihood. When the white man put fences around the area which they demarcated, they pushed some of the Agikuyu people in squatter land within the European plantation and other were moved to the reserves created in the marginal areas (Koinange Njehia O.I, 2017). The Agikuyu who were resettled in the reserves had their families with them and also obtained a grazing room for few cattle (KNA/MA1/7/13, 1903-1911). Many Agikuyu people realised that when they tried to return to their traditional land in order to resume their previous way of life, the land had already been leased out to the settlers and they did not have access to it (Koinange Njehia, O.I 2017). The Agikuyu women were displaced from their indigenous food crop gardens/plots a move that marked the beginning of marginalization of their Indigenous skills and knowledge in food crop production and lack of coherent transition of their indigenous knowledge system from one generation to another (Martin Kinuthia O.I, 2017; Koinange Njehia O.I, 2017). Hence the

Europeans changed and weakened the Africans indigenous Institutions for ther own capitalist interest (Rodney, 1972).

The findings of this study show that the AWIKS in food crop production was greatly affected by the colonial land alienation. Fifty one (75%) of the respondents observed that when the European alienated the Agikuyu indigenous land, they cleared everything that was in that land destroying even the Agikuyu food crops such as sweet potatoes and grains. In addition, 32 (47.1%) and 60 (88.2%) of the respondents mentioned that when the Agikuyu were moved from their indigenous fertile land where they used to grow their indigenous food crops, they lost coherent in use of AWIKS. Transmitting the knowledge and skills from one generation to another was disrupted because the Europeans did not recognize or give attention to the use of AWIKS in food crop production. Further, Sixty three (92.6%) of the respondents stated that the Agikuyu did not have enough experience with the environment and understanding of natural resources around those new reserve areas, in forest margin near the edge of Kireita forest, Aberdare forest and far in semi arid Maasai land where they were pushed to (Table 12). The Europeans also allowed their cattle to trespass on the reserves and squatter land eating up the food crops that women were growing in their small plots in the reserves. Muraya one of the respondents claimed that;

> "The Europeans were being told by the Agikuyu squatters to keep their cattle at home but they were not listeniing to whatever they were being told". (Erastus Muraya O.I 2017)

Table 12
Effects of European Land Alienation on AWIKS

Effects	Frequency	Percent
Destruction of Indigenous food crops	51	75
Lack of coherent use and transmission of AWIKS	32	47.1
Restriction to smaller pieces of land	53	77.9
Lack of enough soil variety	42	61.8
Displacement of their indigenous food crop gardens	60	88.2
Lack of experience with New ecology of squatter and reserve land	63	92.6
Confiscation of indigenous farming tools by Europeans	23	33.8
Reduction of value of women's food crop products	20	29.4
No significant change	14	20.6
Interviews conducted	68	100

Hobley (1967) & Waller (2012) further observed that in the initial stage of settlement in the squatter and reserve land, the squatters were not entirely detribalized. Those of the first generation of squatters or initial land owners in squatter land continued fairly well with their traditional agricultural practices, they remained in touch with the Agikuyu traditional culture and agricultural practices, however, when the new generation of the Agikuyu Squatters reached adult age, extra land was required. Land alienation posed more challenges and difficulty in practicing the traditional agricultural practices in the squatter land because the land for cultivation was continuously decreasing and the demand for food crops by squatters was increasing (Yonah & Gaoshebe, 2014). This implied that traditional agricultural practices and labour networks would decrease, resulting to minimal use of Agikuyu women's indigenous food crop production. It also led to continuous soil exhaustion and nutrient depletion which ultimately adversely affected food crops yields (Mary Wanjugu, O.I 2018).

Hobley (1967) also stated that the Agikuyu people were forced into poorer lands and this led to severe problem of overcrowding in reserves as they were confined to environments they were not used to managing before. The reserves consisted of marginal lands of low productive capability (Waller, 2012). Similary, the Agikuyu reserves in Kiambu were overcrowded which led to deterioration of agricultural production and limited women access to land. Thus women's traditional status declined significantly. Furthermore, in the areas where the Agikuyu women had recently migrated from quite different ecological zone probably they did not have a good understanding of the new environment thus it became increasingly hard to use their indigenous knowledge in observation and prediction of weather variation, hence their traditional seasonal food crop production calendar was highly disrupted.

Agikuyu women may have had very little idea of nature of type of soil in the new ecological areas and how to manage the variety of soils they found so that they could increase the yield of their indigenous food crops. Furthermore, since certain pieces of traditional land were associated with the growth of certain crops, they realized that the soils and extreme cold or dry weather conditions in the new areas could not sustain some of the indigenous cereals, and legumes and so they abandoned them. This meant that the failure to know which indigenous grains or food crops were suitable in such

new areas, the appropriate time to plant and how to manage the soil probably made the AWIKS in food crop production dormant and some were lost. Geographic variability in climate together with low levels of coping and adaptive capacity resulted in high levels of vulnerability for marginalized farmers (Biggs *et al.* 2018).

The loss of land meant that women lost access and authority over it. Indeed, 23 (33.8%) of the respondents observed when Agikuyu women tried to access traditional plots to harvest their food crops, the white Europeans took and threw away their indigenous farming tools such as the digging sticks *(muro)* and baskets *(ciondo)* (Table 12). The Europeans did not recognize that the women's traditional farming tools and storage items were ver important in conserving soil, caring for fragile crops and giving knowledge on soil charactersitc. According to Gachihi (1986), the land alienation and the existing economic pressure played a significant role in reducing the economic independence that was enjoyed by the Agikuyu women prior to European colonialism. As colonialism continued to entrench itself in Kiambu, the perceived importance of women's agricultural contribution to the household was reduced as their vital role in food production was overshadowed by more lucrative European cash crops production (Gachihi, 1986). The trauma of colonialism, discrimination, and the difficulties the indigenous people faced in trying to protect their indigenous land and traditional knowledge, forced them into vulnerable and desperate situations (Jacquelin-Andersen, 2018). Hence this compromised the role of women in food crop production.

Therefore, the colonial land alienation was detrimental to the progressive development of AWIKS and skills as they were subjected to strong external pressure and in extreme cases destroyed which led to absolute poverty, and overcrowding. The colonial land alienation aimed at keeping Africans under proper control in order to safeguard the settlers' interests (KNA/MAI/I/7, 1914-1915).Once segregated from whites, the colonial government pressed natives to adapt western agriculture aimed toward meeting market demands and financial gain to support the cost of British colonial administration (Waller, 2012; Alila, 1977). Therefore, the Agikuyu people were left with no alternative other than to seek wage labor in settlers' farms and government public work service.

5.1.4 Implications of the European Forced Labour on AWIKS in Food Crop Production

The alienation of large tracts of Kiambu required Europeans to introduce ways to stimulate Africans to seek labour in European's farms. The main objective of the European colonialists was to ensure that Africans served their role in the colonial economy as suppliers of cheap labour. European settlers believed that the native labour was as necessary in the development of the land as rain and sunshine. Indeed, they forced the local Chiefs and headmen to recruit labour for settlers' farms and for public works. According to a report by the Native Labour Commission 1910-1912 (KNA/MA1/12/4, 1912-1913) the commission stated that Chief Kinyanjui was one of the main recruiters of labour for the settlers in Kiambu area and in Fort Hall chief Njiri was used by Europeans to obtain labour recruits from Africans in the reserves. They introduced a constant pressure to keep wages low and increased taxation. They consistently gave orders to the chiefs to recruit laborers by force. On the same note, Hollis the then Secretary for Native Affairs recounted how African laborers were recruited by force. He says the Europeans took advantage of the shortage of land to force the Africans lobour. They paid them very low wages, increased taxes and subjected them to very poor living conditions (KNA, PC/PC/8/5/1, 1912-1913).

Some of the respondents lamented that the Europeans got forced labour from the Agikuyu people by paying them low-wages, discouraging them from growing their own cash crops, introduction of heavy taxes. They also introduced identification pass of 1918 and stimulated them to acquire new needs/ wants that would compel them to seek labour (Erastus Muraya, O.I 2017; Koinange Njehia, O.I 2017, Wamoro wa Nderi O.I 2017, and Margaret, Wangari O.I 2017). Kanogo (1993) reported that the first labour recruits from Kikuyu land by the settlers were promised large tracts of land for grazing and cultivating and this helped them to start acquiring Agikuyu labour without a lot of resistance. However, during this time there were very few white settlers and therefore Agikuyu recruit was also ver minimal. Later, a payment for hut tax was introduced in 1901 and it was paid in form of labour in order to force the Agikuyu to provide labour in European farms. However, from 1910 when poll tax was introduced, all male over 16 years were required to pay a poll tax in form of three rupees per month (Clayton, 1970).

Following the introduction of payment of taxes, there was a mass movement of African labourers particularly men from the reserves to settler farms and urban areas in search of wage employment. However, since they could not meet their basic needs and pay the required taxes, they were forced to maintain economic links with the rural reserves. Mcgregor (1927) gives a vivid description of the inhuman treatment and abuse experienced by African labourers in the European settlers' farms. These ranged from physical beating and whipping, to denying them their wages and all adult male were required by the Native Labour Ordinance to be registered and carry a registration card or *Kipande* whenever they moved. This was meant to prevent Africans from deserting their employment without being traced and punished. According to the Kiambu District commissioner's annual report, there were a total of 40,000 men registered by 1922 (KNA/MA1/12/17, 1922).

The colonial labour laws directly affected the Agikuyu women because they were also required by law in some cases to provide wage labour for European plantations. The governor Northey Circulars in 1919 directed the District Officers and African chiefs to procure women and juvenile labourers for private and public works. The Northy Circular of 1919 was particularly used to get women into wage labour (Dilley, 1966; Sorrenson, 1967). The imposition of the colonial labour policies definitely altered the traditional division of labour on food crop production in two major aspects.

Sixty one (89.7%) of the respondents mentioned that some of Agikuyu women spent a lot of their time and energy in forced European cheap labour which was very tedious and in the evening they were completely exhausted and so they could hardly concentrate on using indigenous knowledge in their role of food crop production. Furthermore, 40 (58.8%) of the respondents pointed out that the European forced labour overburdened Agikuyu women because most of Agikuyu men were forced to seek migrant labour employment in European plantation and in urban centers. This took away the Agikuyu men from traditional labour responsibilities they used to have in food crop production (Table 13).

Table 13
Implications of Colonial Forced Labour on Agikuyu Women's Indigenous Knowledge System

Aspect	Frequency	Percent
Lack of enough time	61	89.7
Women overburdened leading to neglect of some AWIKS	51	75
Compromise women's well being	49	72.1
Exclusion of women from wage labour, low wages & taxes	22	32.4
Interviews conducted	68	100

This change in women traditional roles had immense implications on the AWIKS in the sense that the Agikuyu women were forced to move away from their homes for long hours or long period of time in order to supplement their family income. Consequently, they lacked enough energy and time to concentrate on their own food crop production or to utilize fully their indigenous knowledge and skills on food crop production. In explaining how lack of enough time affected the AWIKS on food crop production, 61 (89.7%) of the respondents stated that due to lack of enough time to concentrate, many young women were not able to learn the indigenous techniques systems such as weather observation indicators, selection of quality seeds for planting, suitable soil variety, best farming methods to increased crop yield, harvesting time and he masterly of the traditional seasonal calendar from their elder generation (Table 13). Consequently the indigenous knowledge system may have been adversely disrupted since they were no longer applicable in the Europeans plantations. The cohesion and continuity of the indigenous knowledge system transmission from one generation to another was also greatly disrupted neglected. Furthermore, since many Agikuyu women did not have much experience with weather and climate variation in their new working stations, squatter land and in the reserves, the use of traditional Knowledge and skills was minimal and challenging and even sometimes they were using guesswork (Margaret Wangari, O.I 2017).

Agikuyu women were deeply affected by the Colonial directives on labour recruitment. Europeans demands for women labour were most intensive during the peak labour requirement on their Limuru tea, Kabete and Kikuyu coffee plantation (KNA, AR/275/KBU/10; 8). Women were major source of casual labour during the tea and coffee harvesting period and according to a report by Kiambu District Commission the intensive work of harvesting coffee was mostly being done by the

women and children (KNA/MA1/12/14, 1918-1919; Presley, 1992). Women and children were believed to have more versatile figures for jobe such as harvesting tea and coffee. This exhaustive woman involvement in colonial wage labour made it increasingly difficult for the Agikuyu women to continue with normal traditional way of life especially the use of indigenous knowledge and skills on food crop production because of time limitation and being overburdened (Hannah Kanyuira, O.I 2017). Hence women engagement in colonial forced labor increased their workload and reduced their control over agricultural products (Parpart, 1986).

The introduction of forced wage labour also affected the Agikuyu women through the withdrawal of male labour from the traditional subsistence food crop production. Grey & Patel (2015) trace the marginalization of indigenous women within their own communities to deliberate erosion of indigenous men's productive activity on the land. Kinoti (1983) & Gakuru (1992) observe that the men who were forced to leave their home to seek wage labour in settler farms and in urban areas received very little wages that could hardly sustain their basic needs and enable them pay taxes. Therefore, majority of men were forced to rely on foodstuff supply and support from their wives and children back in the reserves. Women in the reserves worked under pressure to meet the demand of European settlers' cheap labour and at the same time they were expected to continue with food crops production in their small plots in reserves or squatter land in order to sustain food supply required by their male migrant laborers (Wamoro wa Nderi, 2017). Hence the incorporation of women in the colonial political economy led to the evolution of a cyclical process of dependence on colonial forced labor income.

With such immense workload, the Agikuyu women had less time to keep the *shambas* (farms) clean and attended especially those that had labour intensive crops such as Sorghum, these crops either rotted on the stalk or sprouted before it could be harvested (KNA/ AR/1916-1917:1). Mbilinyi (1985) & Gailey (1985) support this point as they state that the withdrawal of male labour from the peasant subsistence production intensified female labour and led to reduction in cultivated subsistence food crop acreage. Agikuyu men began to dominate the new European capitalist economy and indirectly continued to control the ability of women's production. Thus, African women suffered general psychological stress, fatigue and poor health

due to overworking (Grey & Patel, 2015). In addition, 49 (72.1%) of the respondents also mentioned that the European labour laws compromised Agikuyu women's well being due to physical and sexual abuse which were often committed by men (Table 13). Therefore, due to this intensification of Agikuyu women responsibilities, some of the indigenous labour intensive food crop production like rigorous selection of seed varieties for planting, intensive weed control, soil erosion conservation practices, shifting cultivation, crop rotation farm fallowing, slash and burn and harvesting and storage were slowly neglected and underutilized. Other lied dormant as if they are extinct due to changing conditions Lunga & Musaruwa (2016).

Twenty two (32.4%) of the respondents felt that that the colonial forced labour excluded most of the Agikuyu women from wage labour, paid them low wages and imposed taxes on them (Table, 13). The European colonialist exploited cheap female labour as women were being paid very low wages compared to their male counterpart, and they worked under very poor living and working conditions. This resulted to marginalization of the Agikuyu women as Sorrenson (1967) and Pala (1974) reiterate that until mid 1940s there were 23,354 men and only 5,535 women workers in Nairobi. They concluded that it was fruitless for a country to deprive women access to monetary income in the homes and from the farms because it made women to be economically dependent on their male counterpart. Therefore, women played a subordinate role in colonial capitalist cheap labour and therefore slowly neglected and marginalized their vital role in use of AWIKS on food crop production.

5.1.5 Implications of the European Commercial Crops on AWIKS in Food Crop Production

The colonial administrators through Sir John Ainsworth founded the East African Agriculture and Horticulture society (EAAHS) in 1901 with the aim of promoting the growing crop diversification. Coffee was first introduced by Catholic missionaries at Kabete near Nairobi then later ther commercial cash crop farming for export were introduced in other areas of Kiambu (KNA/MA1/12/1903). Therefore, the then British Commissioner Sir Charles Eliot encouraged settlers to grow a variety of cash crops and food crops for export because he belived that the production of indigenous food crops alone could not pay for administrative costs, the Uganda Railway and make the protectorate economically viable (Huxley, 1968;

Elkins, 2005). The diversification of crops production in Kiambu had significant implications on the Agikuyu women indigenous knowledge systems.

At the beginning of the European colonialism in Kiambu, the Agikuyu people were encouraged by the European to grow food crops for export in order to earn money to improve their standard of living (KNA/MA1/16/1911). The promotion of the new crops was linked to changes in crop production and general land management, specifically a move towards intensified monocropping and the abandonment traditional shifting and rotational farming (Waller, 2012). The commercialization of agriculture during the colonial period in Kenya especially in Kiambu restricted Africans from growing cash crops such as coffee and tea. This affected Africans economic capacity and self-sufficient food crop production such that the European settlers' acreage under coffee farms in Kiambu had risen from 600 in 1907 to 10,000 acres by the end of 1914 (Cowen, 1981)

From 1904 Africans were not allowed to grow commercial food crops and cash crops in the pretext that they could not manage growing them properly and that could lead to the spread of crop diseases in settlers' farms (Kitching, 1980). However, it was clear that the Europeans feared African competition in the production of cash crops therefore, at this time the commercial agricultural output for the African was minimal compared with the Europeans. Therefore, the period between 1903 and 1918 was one of expansion for settlers' commercial food and cash crop agriculture (Huxley, 1968). The settlers believed that their economic interests were to be safeguarded by keeping Africans under firm control.

The introduction of cash crop farming distorted the existing traditional food crop production systems and as a result it affected the AWIKS on food crop production. Sixty three (92.6%) of the respondents stated that when the European established experimental cash crop farms for coffee and tea in Kiambu area, the Agikuyu people were restricted from growing such cash crops (Table 14).

Table 14
Implication of Cash Crops and European Farming Methods on AWIKS on Food Crop Production

Change	Frequency	Percent
Restricted African farming	63	92.6
Introduction of monoculture (single) cash and food crops plantations	37	54.4
Large scale mixed farming	25	36.8
Introduction of new farm implements	41	89.7
Distribution of new crop seeds variety	42	61.8
Training of African agricultural instructors	13	
Total interviews conducted	68	100
Effect of commercial cash cropson AWIKS	Frequency	Percent
Marginalization of traditional food crops	52	76.5
Reduction in utilization of AWIKS on food crop production	29	42.6
Decline in transmission of AWIKS on food crop production	33	48.5
Restriction in use of AWIKS on food crop production	22	32.4
Interviews conducted	68	100

Ndangwa, (2017) observed that settlers introduced commercial agriculture on a large scale, foreign cash crops for export to the western markets, which that added strain on the local eco-system. Furthermore, food crop diversity was lost in the twentieth century due to replacement of local varieties by genetically uniform High Yield Varieties (HYVs) and fast growing commercial food crops (FAO 2016).

The European restriction of Africans from Cash Crop production and the neglect of domestic food production had some implications on the AWIKS on food crop production. Although the Agikuyu women continued to grow some of their indigenous food crops using their indigenous knowledge systems and skills, 52 (76.5%) of the respondents stated that some of the food crops they used to grow which needed a lot of attention, time and care. Most of the traditional food crops were drought resistance like the traditional colored kikuyu maize, millet and sorghum, tuber crops, cassava, yams were slowly being neglected (Table 14). Lunga & Musaruwa (2016) pointed out that colonial agriculture largely destroyed traditional structures since it dictated what natives could grow not to grow to give settlers a competitive advantage.

A variety of traditional cereals that were drought resistant were replaced with flat Hickory King-white grade maize, English (Irish) potatoes, carrots, Rose coco beans

and kidney beans that were viewed as fast growing, high yielding varieties and commercially viable were mainly introduced as cash crops and were important because of their dual role as food and cash crops (Kitching, 1980). The commercial crop production was intended for meeting British demands especially during First World War time food shortages. The new market system required competition for resources and export of both cash and food crops. Therefore the price for the Hickory King-White maize was higher than the traditional maize *(mbembe ya githigu),*it also replaced drought-resistant sorghum and millet as the staple crop grown both seasons which made the Africans to become more vulnerable to inevitable drought events (Alila 1977; Overton 1987).

According to Kiambu District Annual report 1912-1913, one Indian shop exported from Limuru 20 tons of Hickory King-white grade maize in one month (KNA/MA1/12/4, 1912-1913). The Europeans argued that the new maize and bean variety had a shorter growing season than the traditional food crops and could be exported to South African ready market. Twenty nine (29) (42.6%) of the respondents stated that as a result of marginalization of some labour intensive traditional food crops, there was a significant reduction in use of AWIKS on food crop production (Table 14). For example, the Chiefs, Headmen and Agricultural Instructors were initially distributing the seeds for these new crops freely to the local people but later the local people were to buy them from Indian shops (Wamoro wa Nderi, O.I 2017). However, Nancy & Katherin (2008) reported that the new food crops that were brought by the European settlers were generally accepted by the indigenous people and were slowly adopted into their food crop production systems. Similary in Kiambu these new crops alone did not end of traditional food crops, but their cultivation by the Agikuyu people initiated the process of marginalisation of AWIKS on food crop production. Colonialism undermined the decisions of the indigenous people's knowledge to grow indigenous food crops and they were forced to slowly adapt the knowledge system (Grey & Patel, 2015). Hence, some of the traditional drought resistance food crops were pushed to the periphery to pave way for the commercial cash crops

Moreover, 37 (54.4%) and 25 (36.8%) of the respondents indicated that the European government also established large scale single crop plantations (monoculture) and

large scale mixed farming of cash crops and of livestock production for commercial purpose and the domestic food crop production was slowly being neglected (Table 14). To this extent, crop production was more diversified during the early colonial period because the colonial government was very anxious to modernize agricultural production in order to realize profit. However, Verena & Raschke (2007) pointed out that during the establishment of the large scale cash crop plantations numerous indigenous food crop species were destroyed or were no longer available because their habitants' were destroyed or cleared for commercial agriculture (ecological damage). FAO estimated that 75% of the world's food crop diversity has lost in the twentieth century due to replacement of local varieties by genetically uniform high yield varieties and fast growing commercial food crops (FAO 2016). In Kiambu, large scale mono cropping European plantations for commercial purpose played a role in undermining Agikuyu women's indigeous farming knowledge system.

The colonialist encouraged the Agikuyu people to plant these crops especially the Hickory- King (white maize) in straight lines and to avoid mixed cropping for better yield (Musalia, 2010). This was a change from the traditional set up where the Agikuyu women were using inercropping and fallow farming in order retain soil moisture and improve food crop yield. Indigenous knowledge was very effective in meeting their food requirements, in areas of land clearing, sowing, harvesting, weeding, fallow farming, mixed cropping, intercropping, crop rotation etc. helped tremendously in their bumper harvest. Indigenous crops of a particular area played a vital role in food security Jiri *et al*. (2016). Other crops that were gaining popularity because for the ready market in towns were onions, carrots and a variety of vegetables such as kales and cabbage which were being grown at Kabete, Limuru and Upland near escarpment on the edge of the Agikuyu reserves (Musalia, 2010).

The modern crop production methods slowly displaced the indigenous drought resistance crops such as millet, cassava, arrowroots, yams that were also very reach in nutrients. The traditional varieties of cereals such as millet and Sorghum were grown to ensure food security (Lunga & Musaruwa, 2016). However, according to the respondents, the Agikuyu people were still finding it difficult to adopt the new single crop farming because they were seeing it as very tedious, that its single plant could

take too much land at the expense of other food crops, and therefore the method could compromise the food supply in households.

During the first and second decades of colonial rule, the traditional agricultural seasonal calendar generally remained the same and it was still based on the rainfall patterns of the year. However, the food crop production patterns were changing in order to accommodate the new commercial crops (Kitching, 1980). The shift towards large-scale monoculture and large scale mixed farming led to systematic loss of indigenous food crop variety which demanded a lot of time and did not have a lot of commercial value. This implied that the process of erosion of indigenous agricultural practices and loss of AWIKS continued and the Agikuyu women could no longer use effectively the indigenous knowledge and skills on food crop production. The indigenous knowledge was undermined because the natives were adapting the knowledge that was in line with colonial demands (Lunga & Musaruwa, 2016). Hence, the introduction of cash crop farming played a major role in undermining, marginalizing, neglecting and underutilization of the AWIKS on food crop production that was used to enhance availability of food in the household.

Furthermore, 61 (89.7%) of the respondents mentioned that the European colonialism introduced new farming implements and skills such as the use of Jembe, ox-drawn ploughs and tractors for ploughing, farming machines, use of fertilizers and chemical pesticides. Further, 42 (61.8) of the respondents stated that the Europeans encouraged the Agikuyu people to use the new seeds that being imported from Europe and from South Africa by the government and were being provided to the Agikuyu farmers (Table 14). The idea of providing the Agikuyu farmers with variety of seeds from Europe and South Africa pushed to the periphery the women's indigenous knowledge and skills in selecting the best and healthy food crop seeds for planting.

From the onset the European viewed the individual planting of indigenous crops using indigenous Agikuyu women's traditional farm implements such as the digging stick *muro* as barbaric and uneconomical form of agricultural production. According to Koinange Njehia (O.I 2017), the Agikuyu Agricultural Instructors were being taught the new European western farming techniques at Kabete by extension Officers then they were posted to the reserves to manage and supervise various demonstration

farms. The training took two years and no traditional food crop production knowledge and skills was incorporated during that training and in some areas like in Limuru tea plantation farms, the Europeans banned the use of traditional agricultural knowledge and practices (KNA/MA1/12/10, 1914-1915). Colonialism came with modern technology and introduced modern chemical pesticides, which were not kind to the environments because the usage of pesticides and fungicides on crops added strain on the local eco-system (Ndangwa, 2017).

Indeed, 33 (48.5%) of the respondents said that the AWIKS on food crop production were neglected and the transmission from one generation to another through observation and imitation was disrupted slowly and it was slowly replaced with agricultural training from the Agricultural officers (Table 14). This was evident by how some children and youths in the reserves were not able to use the traditional farming techniques (land preparation, seed selection, planting and weeding, harvesting and storage) properly (Hezra Njehia O.I, 2017). Other respondents lamented that they ate food crops but they had very little idea of the AWIKS that were used by women to produce them. Furthermore, they said that they had only heard about some of the indigenous women's food crop production practices but they had not used them (Margaret Wangari O.I, 2017; Hezra Njehia O.I, 2017; Erastus Muraya O.I 2017). This varying degree of familiarity with AWIKS on food crop production could only imply that the use of AWIKS in food crop production was slowly declining in the first two decades of colonialism in Kenya.

However, it is important to note that while the new European agricultural implements and mechanization were meant to increase crop production for commercial purpose, they had far reaching changes in Agikuyu society. The new farm implements and technology such as ploughs and use of fertilizer were very expensive, the majority of the Agikuyu farmers in Kiambu could not afford to use them, and only a few wealthy farmers, clans, chiefs and headmen could purchase one collectively (Dilley, 1966). Therefore, even with the introduction of the new farming mechanization the Agukuyu women continued to use their traditional farming tools and technology which they were using prior to European colonialism due to lack of money to buy the new European tools in their small reserves and squatter land plots. However, the Europeans did not incorporate the Agikuyu women's indigenous farm tools in the new

western farming mechanization because they were viewed as backward and uneconomical. Thus, they were marginalized since the use of new European farming techniques and implements did not require indigenous implements and skills to operate.

The IKS that helped to add soil fertility and to minimize growth of weed in order to increase food availability in households lied dormant, which perhaps led to a significant neglect, marginalization and underutilization of AWIKS in food crop production. The popularization of cash crops caused many difficulties for the traditional farming community and the landscape balance because farmers used the traditional land and water resources but at the same time remain contributed less to the indigenous farming activities (Abeywardana, 2019).

5.1.6 Effects of Introduction of Christianity and Western Education on the AWIKS in Food Crop Production

As early as 16th and 17th centuries, the Roman Catholic Missionaries from Portugal were along the East African Coast and until the end of the 19th century, the British protestant Missions worked mainly on the coast Temu (1972). He came to Africa during the time of slave trade and he believed that the development of commerce, Christianity and Civilization (3Cs) in Africa would help to wipe out slavery (Nkomanzana, 1998). However, modern Christian activities in East Africa began in 1840s (Bewes, 1953; Welbourne, 1965). Around 1840s, Johan Ludwig Krapf, a German working under the Church Missionary Society (CMS) had established himself on the East African Coast, Johannes Rebmann later joined him and the two began to move in to the interior to establish their Mission Society (Bewes, 1953; Welbourne, 1965).

All the same, with the establishment of the British rule in Kenya, the position of the Christian Missionaries changed. According to Tignor (1976) one of the direct consequences of the completion of the Uganda railway was the influx of Christian missionaries into the Kenyan interior. Before 1890, there were very little missionary activities in the Kenyan highlands but by the beginning of the First World War there were seven missions in Kikuyu, Kamba and Massai. The colonial administrators gave them protection they needed to get into the Kenyan interior (KNA PC/CP/4/3/2, 1911;

Bewes, 1953). When the 1902 Crown-Lands Ordinance was passed, the Missionaries acquired land alongside settlers and so their settlement in Kiambu corresponded with that of other European settlers.

According to a report by the Kiambu District Commissioner in the year 1911-1912, the missionaries used the same Crown Lands Ordinance to obtain land for Mission activities such as building schools, churches, and hospitals and for cash crop experimental farming (Cagnolo, 1933). Rev. Thomas Watson reached Kikuyu in Kiambu from Kibwezi by 1898 and established a Mission society that was later taken over by the Church of Scotland Mission (CSM) (Colderwood, 1948). In 1899, the Roman Catholic Holy Ghost Fathers arrived and in 1900, the Rev. A.W. McGregor of the Church Missionary Society (CMS) established a mission at Kabete. Later, the African Inland Mission (AIM) set up its headquarters at Kijabe (KNA/MA1/16/20, 1911-1912).

Prominent local leaders such as Kinyanjui wa Gathirimu and Waiyaki wa Hinga sold a piece of land to the missionary Rev. McGregor to construct a resting house and later the other missionaries started using it as a place where he could to teach the Bible from (Rosberg & Nottingham, 1966). The main aim of both the catholic missionaries and the Protestants was to evangelize the Africans and convince the indigenous people to abandon their ‘uncivilized’ customs in favour of Christianity (KNA/PC/CP/4/1/2, 1912). They missionaries incorporated other activities as social welfare, medical and health care, teaching Africans how to read, write and arithmetic, agriculture and handcraft in their mission (Mathew, 1952). However, neither the Catholics nor the Protestants appealed much to the Agikuyu people because they felt alienated and they could not see much difference between the Missionaries and the settlers.

western education was introduced at Thogoto as early as 1906. The education provided to the Agikuyu was limited in quality and was meant to facilitate the spread of Christian activities and colonial domination. Mission schools, churches and health programmes were primary centres for European cultural indoctrination which were responsible for educating youths. The Scottish Mission was instrumental in founding in Kikuyu the Alliance of Protestant Mission School (Strayer, 1978).

The Agikuyu people of Kiambu initially were interested in European education because of the expanding employment opportunities such as artisans, clerks and farm foremen, other men who gained missionary schools left reserves to seek labour in Nairobi town (Tignor, 1979).

However, the European missionaries took the advantage of the steadily growing interest of the Africans in formal education to expand and regulate it. European settlers and the administrators felt that Africans needed industrial and technical education in order to be able to participate in their capitalist economy and the missionaries emphasized on learning English due to high demand for clerks (Leys, 1975). Nevertheless, all the Europeans provided Africans with education that was more attractive to colonial capitalist expansion and modernization agenda. They emphasized on education that contributed to expansion of Christianity and economic development. On their side, the Europeans were not to concern in understanding other knowledge systems as such, but to gather from indigenous knowledge information for the advancement of western capitalism (Mafongoya & Ajayi, 2017).

The missionaries took an uncompromising stand against African indigenous practices without proper understanding their vital roles in economic development. Indeed missionary's activities were part of the entire process of colonial domination, the missionaries regarded excessive education as harmful to the Africans (Ahlberg, 1991). Stayer (1978) reported that in 1906 the number of hours per day for the education was reduced from five to three and the missionaries further limited the number of years an African student could attend school. Through the civilization mission, the missionaries played a significant role in devaluing and marginalizing the Agikuyu indigenous practices (KNA PC/CP/4/3/2, 1911). The situation was compounded by the colonial administrative approach where education selectively directed to sons of chiefs, for the colonial loyalist and for male who the majority recruits in the European plantations. Though indigenous knowledge system was portrayed as static, it constantly changed, was being produced as well as reproduced, discovered and lost (Mafongoya & Ajayi, 2017).

The establishment of European education and missionary's activities in Kiambu played a significant role pushing the AWIKS on food crop production to the

periphery. Thirty three (48.5%) of the respondents said the European missionary teachers or educators encouraged the adaptation of western cultural values and way of life that included the disgust for traditional foods and indigenous knowledge and skills of producing them. At the same time, 55 (80.9%) of the respondents pointed out that the missionaries took over large pieces of Agikuyu people's fertile land at Thogoto near Odiri swamp and at Kabete and pushed the Agikuyu people to the infertile dry semi-arid land at Karai and Kamango reserves areas in Kikuyu (Table 15). According to Verena & Cheema (2007), the primary agents of cultural indoctrination were the mission schools and public health programmes. Their method of education reduced and devalued the knowledge related to traditional cultivation methods and preparation of indigenous food. Colderwood (1948) also reported that the Church of Scotland Mission took 3,000 acres of land at Thogoto in Kikuyu at a time when the Kikuyuland was experiencing serious famine and diseases. This had a lot of implications of the AWIKS on food crop production.

Table 15
Effect of Missionary Activities on the AWIKS on Food Crop Production

Effect of missionary activities	Frequency	Percentage
Encouragement of adaption of western values and style	33	48.5
Devalued the AWIKS on food crop production	36	52.9
Loss of fertile land and food crops to the missionaries	55	80.9
Interviews conducted	68	100

The missionaries devalued and failed to recognize the role of the AWIKS on food crop production during their training at missionary schools and institution, they only emphasized on training the Agikuyu women on how to become good domestic workers and good mothers. This type of education that was provided by the missionaries was aimed at offering African with technical training, which made some of the benefitiaries to move from the villages to seek lucrative jobs in towns. This disrupted the AWIKS because it inculcated negative perception about the Agikuyu traditional farming practices as they were described them as "barbaric", "primitive", "outdated", "inferior" and "mythical" (Cagnolo, 1933). They claimed that the younger and more formally educated generation was embarrassed to be associated with it (Muyambo *et al.,* 2017). However, what the missionaries did not understand is that the African indigenous knowledge system had never been

“simple” or “static”, but had been evolving slowly in response to increased ecological changes (Zeleza, 1993). Even so, some elements of the indigenous knowledge system continued to exist but at the periphery of the capitalist economic development (Audefroy & Sa´nchez, 2017). Through western education missionaries’ created Agikuyu elites and some of the beneficiaries became agents of eroding AWIKS on food crop production.

A report by the District Commissioner Kiambu indicated that the missionary boundaries in Dagoretti sub district and All Saint mission at Kiambu had 60 acres of land in the year 1911 (KNA/MA1/16/20/1911-1912). The area where the Agikuyu families were moved to the climate for growing a variety of indigenous food crop was not conducive and therefore some of AWIKS on food crop production was neglected. They also added that although the Agikuyu continued with production of some their traditional food crops like millet, sorghum, maize and beans and cassava in the new reserve areas, their yield was significantly minimal due to infertility and type of the soil and lack of enough rainfall to sustain the crops to maturity.

Therefore, the missionary’s activities had far reaching implications on the Agikuyu indigenous food crop production practices (KNA/MA1/12/8, 1915-1916). However, by the 1918 Agikuyu women were still practicing most of their indigenous knowledge systems on food crop production but they were slowly adapting the western knowledge and skills but their central role in food crop production had been significantly pushed to the periphery to pave way for the utilization of western European methods of farming.

5.1.7 The First World War and the AWIKS on Food Crop Production

The First World War began in Europe in August 1914 following a long built hatred between European nations, especially Britain and Germany. British in East Africa recruited an estimated 120,000 soldiers including Europeans, Africans, and Indians who were enrolled in the British East Africa forces (Hodges, 1999). Despite the fact that the First War of 1914 to 1918 was fought in European countries and Ottoman Empire in the Middle East and in East Africa, it had far reaching consequences on the African people. Hobley (1967) states that the outbreak of the war came as an unexpected shock to the Agikuyu who had very little conception of the distinctions

between the various white (races) and were somehow confused by the conflict because they never dreamt that Europeans would ever resort to arms among themselves. The war caused a crisis in labour demand because several projects needed huge amount of labour force and thousand of able-bodied were conscripted in to the war either forcefully or voluntary (KNA, AR/273, KBU 1915-1916).

Hodges (1999) stated that during the war some Africans were forced by the prevailing circumstances to work away from their homes. Some were recruited in the European military services as carrier corps, intelligence agents, real combatants or soldiers in K.A.R (King's African Rifles) where they were hardly given any military instructions on these specialties. Initially the Africans thought that the war would be over in a few months and therefore they responded with enthusiasm to the call for the recruitments (Hobley, 1967). However, as the War continued year after year, the poor African recruits were working in conditions were generally poor and no proper administration existed for the care of the labourers and transport. It was recorded that over half of the number of soldiers who were recruited in the war, came from East African Protectorate that is Kenya (Hobley, 1967; Ochieng *et al.*, 1997; Crowder 1985). The extensive recruitment of the Agikuyu men into the World War 1 may have had far reaching effects on the indigenous subsistence farming knowledge and practices.

The colonial government depended entirely on the chiefs, headmen, and council of elders for the military and labour recruitment before and during the war. A person like Chief Kinyanjui of Kiambu was quick to ally with the British government as he conscript military labour for them (KNA/MA1/12/13, 1917-1918). It was estimated that by the end of the year 1917, about 160,000 men, thousands of them Agikuyu, had been enlisted in the war as servicemen and this was about 77% of all the able – bodied young men particularly from Kikuyuland (Rosberg & Nottingham, 1966). However, large number of the Africans who were recruited in the war suffered injuries, malnutrition, hardships and while others died in tens of thousands from diseases such as dysentery and pneumonia. Those who were left in the Reserves, mostly women, the elderly, and young children experienced famine, poor living conditions, and severe epidemics (KNA,AR/275/KBU/10;8). Women in particular were compelled to take all the family responsibilities in the absence of men and to

nurse the sick, injured and the aged. The Agikuyu women were greatly underprivileged by the economic stagnation, labour policies, drought, loss of life and diseases that occurred during the First World War (Huxley, 1968).

The involvement of the Agikuyu people in the First World War had significant implications on the Agikuyu indigenous food crop production. Thirty-seven (54.4%) of the respondents stated that during the war, many indigenous farmers especially men left their homes to be enrolled as soldiers, carrier corps and also in European farms. In addition, 42 (61.7%) of the respondents mentioned that during the First World War agriculture deteriorated as serious shortage of farming and grazing area and land degradation being experienced in the Agikuyu reserves. While 14 (20.6 %) of the respondents pointed out that during the War, a lot of food crops were destroyed and farm implements stolen by some of the Agikuyu people in the reserves and in squatter land who were protesting against forced labour, lack of wage and increased taxation (Table 16).

During the War there was sustained deterioration of the social fabric and increasing destabilization of the institutional framework (Jacquelin-Andersen, 2018). Being away from their homes and communities for several years meant that some of the Agikuyu people had several years away from their subsistence farms production in the reserves. Therefore, access to land and utilization of the indigenous food crop production practices probably was minimal. In fact, some Agikuyu women left home to urban centers like Nairobi, while the Agikuyu women had little chance for waged employment in town, other opportunities to earn money existed; like beer brewing, gardening, selling food and services (including prostitution) (White, 1993).

Table 16
Effect of the First World War on the AWIKS on Food Crop Production

Area affected	Frequency	Percentage
Decline of community cohesion and continuous use of AWIKS	34	50
Alteration of pre-colonial division of food production roles	37	54.4
Neglect of food crop production	42	61.7
Destruction of food crops & farm implements	14	20.6
Interviews conducted	68	100

The Agikuyu women were also working between bazaars and railway station (KNA/MA1/12/11, 1914-1915). However, in town the access to cultivating land in order to use AWIKS on food crop production was more difficult. This desertion and neglect of the farms and the indigenous farming practices during the First World War affected the food crop production in the reserves. Energetic men and women went away for long leading to generational and social network breakdown in the transition of indigenous knowledge systems which may have affected the continuity of the AWIKS on food crop production. The War also led to increased demand for supply of women and children labour from the reserves in to the European plantation and farms (Ndangwa, 2017). Hence, many Agikuyu women may have abandoned their traditional food production role to seek for wage labour, which resulted to underutilization of some AWIKS in the reserves and in squatter's land.

The growth of indigenous drought tolerant food crops was ignored due to the prolonged period of dry season, disease and pests and it was possible that the community became vulnerable to drought and famine which was locally remembered as the famine of Thika *(Ng'aragu ya Thika)* which occurred between 1914 and 1981 in Southern Kikuyu land because relief food for most of central Kenya was supplied through the newly constructed railway branch connecting Nairobi to Thika (Stitcher, 1982). The Agikuyu women from Kiambu were working in the European plantations as well as porters between Nairobi Railway and Thika (KNA/MAI/1/2, 1914-1915). The change of weather and prolonged drought during the First World War affected the AWIKS significantly, due to extreme shortage of rainwater, indigenous food crop production farming practices may have been interrupted. There was disruption in planting time and in harvesting time due to delayed unpredictable onset of rains and climate change. This implied that the application of AWIKS declined because food crop production was very low due to decline in rainfall and lack of fertile soil. Khatri-Chhetri *et al*. (2017) observed that agriculture production was affected significantly by increase in temperature, changes in rainfall patterns and variations in frequency and intensity of extreme climatic events such as droughts. However, it is possible that communities develop a variety of measures that have helped them to survive climate changes with little or no help from the outside, such as growing drought tolerant and early maturing indigenous crops, gathering wild fruits and vegetables, cultivating wetlands, and diversifying crops.

This led to the destruction of the Agikuyu women's livelihood through the loss of some food crops and tools that were being used for food crop production. Consequently, the Agikuyu women were forced to turn into wage labour and in the process the time and opportunity for traditional food crop production practices further diminished. The more the Agikuyu women distanced from the traditional food crop production, the more the indigenous knowledge systems were marginalized and compromised the effective use of AWKIS on food crop production.

5.1.8 Conclusion

From the findings of this study, it is clear that the establishment colonial rule in Kenya had a lot of implications on the AWIKS in food crop production. From the beginning, the European colonialist ignored the Agikuyu way of life and they were able instilled in the minds of the indigenous people that the practices were primitive and backward. Agikuyu Land alienation, new cash crop and food crop farming and western education and Christianity introduced. All this slowly marked the beginning of transition from the subsistence food crop production to cash and food crops that had more economic value and utility. The Agikuyu people were forced to partly abandon their traditional agricultural practice in order to fit in the European Capitalist economic policies. Particularly, the Agikuyu women were integrated into the colonial capitalist economy as cheap forced labourer and their important role in food crop production through the use of indigenous knowledge and skills was not recognised.

Agikuyu women's participation of the Agikuyu in the wage labour made it difficult for them to continue utilizing the AWIKS because they lacked enough time and access to land. Furthermore, while some of the Agikuyu children and women were away to attend missionary schools for Western education and Christian teachings, they were not able to learn and to fully utilize their indigenous knowledge on food crop production. They lost touch with some of the AWIKS for long leading to generational and social network breakdown. The women's adaption of European capitalist economic agenda, the modern farming methods and technology led to neglect of indigenous food crop production, which implied that the AWIKS in production of such crops was underutilized.

5.2 Implicatinons of Colonial Policies and Practices on the Awiks During the Inter-War (1919-1939)

5.2.1 Introduction

The period from 1919 to 1939 was characterized by African Nationalism which was a desire for Africans to forge a new identity and a sense of belonging. Africans especially the Agikuyu people had begun to lose patience with the colonial government over the continuous land alienation, the massive exodus of Agikuyu squatter labourers in settlers' plantations and in the rift valley, heavy taxation and racial discrimination. This chapter examines how the intensity of colonialism in Kenya generated deep mistrust among the Agikuyu people who broke their silence by forming of nationalist movements, which they could use to air their grievances. It further examines how the involvement of the Agikuyu people in the nationalist movements affected the AWIKS on food crop production. It also explores implications of the Great Depression of late 1920s and early 1930s on the Agikuyu women's Indigenous Knowledge systems on food crop production.

5.2.2 Socio-Economic Changes after the First World War and its Implications on AWIKS

During the inter-war period, the Africans especially those who had participated in the First World War had began to understand the structure of colonial domination. The First World War had contributed significantly to the African political awareness in the sense that many Africans who participated in the war as soldiers and *carrier corps* met and compared their experiences. This created a sense of unity since they realized that they shared common problems. The experience of the years from 1914 to 1918 effectively awakened the Africans especially men politically, it also had some changes on the indigenous subsistence agricultural practices (Rosberg & Nottingham, 1966).This study observed that the European reconstruction strategy during the interwar period affected the Agikuyu women's indigenous agricultural practices.

The intensity of the land and labour issues was increased and given a sharper focus by the changes that were taking place in the Agukuyu reserves during the interwar period. Twenty five (36.7%) of the respondents lamented that after the WW1 there was disease (influenza) outbreak in 1918-1919 followed by the economic misery

followed in 1921-1922 (Table 17). In addition, Berman (1992) reported that the European settlers' population arose steadily from 3,175 in 1911 to 9,650 in 1921 and to 12, 529 in 1926 which meant further land alienation from the Agikuyu people. The settlers were also able to gain several legal statements from the Secretaries of State particularly the famous "Elgin pledge" which tactically pointed out the permanent nature and exclusion of the white highlands to the white settlement that enabled them to block the Indians from entry to agricultural endowed fertile areas of the Kenyan highland (McGregor, 1927; Ochieng, 1986).

The European settlers continuously made sure that the Kenyan government and its agents in London encouraged a steady flow and settlement of European immigrants in the white highland and also made efforts to put obstacles on Africans not to own land in the white highland (McGregor, 1927). Furthermore, the colonial government in Kenya organized for the settlement of ex-soldiers and ex-officers after the First World War by establishing the Soldiers Settlement Schemes of 1919-1923, which resulted in additional 500 families to the European community. Consequently, more than 60,000 acres of land mostly from Kiambu had been alienated to settler farmers and thousand of the Agikuyu people had lost their right to access and use the land, and they were told to move elsewhere (KNA/MA1/12/16, 1920-1921). The settler-oriented administration pushed Africans into racially demarcated reserves from where they were expected to sell their agricultural produce and enter the colonial economy. Several legislative changes during the First World War regarding labor laws and taxation precipitated Thuku's protest (Aiyar, 2011).

This made the Agikuyu people to move to other areas, which did not have organized food crop production system, and therefore they became more vulnerable to drought and famine. Biggs *et al.* (2018) pointed out that lack of indigenous knowledge in geographic variability and climate prediction together with low levels of coping and adaptive capacity may lead to high levels of vulnerability for marginalized farmers. The Agikuyu people continued to feel a sense of loss and deep mistrust towards the colonial administration over the alienated land (Gachihi, 2014). All these efforts by the colonial government to alienate the African land meant that many Agikuyu people were displaced and relocated to new settlement gazetted reserves where they had very little or no idea of the new ecological zone. Therefore, this led to significant decline in

the use of the AWIKS on food crop production. Biggs *et al.,* (2018) stated that area geographic or ecological information regarding which drought-resistant crops to grow, when and how to grow them could increase farmers' capacities to prepare for and withstand such long term drought, famine and climate stress.

The continuous land alienation led to rapid increased number of the Agikuyu population within the boundaries of the reserves resulting to serious congestion and severe soil deterioration and erosion in parts of reserve (James Mwangi O.I, 2017, Njuguna Waithaka, O.I 2018, Margaret Wangari O.I, 2017). According to the Kiambu District Commissioner, there was inadequate monitoring of the fragmented land which had already reduced in size and this led to a significant decline in food crop production (KNA/MA1/12/16/1920-1921). This implied that due to lack of sufficient land for sustainable food crop production and limited time to travel to monitor the fragmented land, some of the indigenous knowledge skills and farming methods like shift, crop rotation and fallow cultivation might have been neglected. Such traditional farming methods were sustainable approach in increasing yield and in reducing the climate-driven crop failure as variety of crops were grown on different ecological zones and in different time (Liu *et al.*, 2016).

In addition, in 1920s in Kiambu, the process of land accumulation in the hands of wealthy farmers particularly the educated *(Athomi)* emerged and this went hand in hand with the Agikuyu demand for legal recognition of individual tenure. There was also an emerging group of impoverished landless rural poor existing as tenants with limited rights on the large European farms. This group of the Agikuyu people lacked sufficient land to meet their cash and consumption needs, which led to continuous dissatisfaction and frustration among the Agikuyu people (Kanogo, 1993). Indeed, 31 (45.6%) of the respondents observed that there was a serious shortage of labourers during the after the First World War years due to continuous withdrawal of Agikuyu women and men from their indigenous subsistence agricultural practice to go and work in European settlers farms (Table 17).

Table 17
European Post WW1 Reconstruction Strategy in Early 1920s and Its Implications on AWIKS

European Economic Strategy	Frequency	Percentage
Intensification of land alienation and African land fragmentation	25	36.7
Continuous withdrawal of Agikuyu people from indigenous agriculture	31	45.6
Increased western education and agricultural instructions	15	20.1
Encouragement of Agikuyu to grow food stuff for internal market	33	48.5
Interviews conducted	68	100

Stichter (1982) added that the European settlers were working hard to expand export production by increasing taxes and lowering wages. The squatters were also brought under coercion by the Resident Native Labourers Ordinance (RNLO) of 1918 that encouraged systematic regulated squatting as a source of labour (KNA/ MGM 1/1/16). Initially many Agikuyu people used squatting as an excuse to ran away from harsh conditions in the Agikuyu reserves and also as a chance to take on "Kaffir farming" where large European absentee land owner allowed them to use the land for cultivation for payment in cash or in kind (Kanogo, 1993). However, due to increased labour demand this practice was made illegal and the squatters' tenants rights were extinguished.

At the same time 15 (20.1%) respondents said that in post First World War period there were increased missionary schools and agricultural instructions on European methods of crop production and AWIKS on food crop production were not incorporated in the training because they were perceived as outdated (Table 17). Kenyanchui & Ogutu (1992) stressed that the missionaries and the colonial administrators provided western literacy education, simple agricultural instruction, technical and vocational training for skilled artisan that was based on British capitalist ideology. The European colonial government also came up with the Dual Economic development Policy in 1923, which was meant to provide Africans with agricultural education on food crop production so as to increase food for feeding African cheap labourers (McGregor, 1927; Miracle, 1974).

Musalia (2010) stated that by the end of 1922 the Scott Agricultural Experiment Laboratories and Training facility had already been established at Kabete on the edge of Kikuyu reserves to train African instructors. However, only the children of well-to-do Agikuyu people accessed this training. The Phelps-Stokes Commission that was set up in 1919 recommended the introduced of technical and industrial education in African schools to enable them work effectively as clerics and artisans (KNA, MAK/KEN/2/4,1935,12). The role of the AWIKS on food crop production was not recognized or integrated in the limited agricultural training that was being given to the Africans and therefore Agikuyu women's indigenous knowledge was further undermined and weakened. Indigenous knowledge of food production served as a coping mechanism of coping with drought or famine (Chanza, 2016).

According to 33 (48.5%) of the respondents the European agricultural officers encouraged Africans to produce large quantities of food stuff for local market (Table 17). Production of fast growing and marketable food crop such as English (Irish) potatoes, maize and beans was highly encouraged (Miracle, 1974). The post World War 1 emphasis on food crop production was greatly influenced by the interest of European settlers and not the need to improve African agriculture. At a face value, the Dual Economic Policy aimed at increasing Africans agricultural production in the reserves but practically Europeans knew that any policy that could benefit Africans had to be carried out without interfering with European interests (Berman, 1992). Therefore, in 1920's both Europeans and the Africans responded by increasing maize production. As a result, the Agikuyu neglected the production of more drought tolerant crops such as cassava, sorghum, millet, and sweet potatoes which they produced using their detailed knowledge system in order to increase the availability of food crop. Chirimuuta & Mapolisa (2011) pointed out that the indigenous farmers cultivated diversity of food crops such traditional maize, grains (sorghum and millet), tuber crops (sweet potatoes, cassava and yams) and other crops as a strategy of ensuring the adequate availability of food in the household.

Therefore, the colonial Dual Policy of 1923 had immense implications on the AWIKS on food crop production in the sense that the heavy burden of drastic intensification and diversification of food crop production during 1920s was largely shouldered by the Agikuyu women. This meant that the Agikuyu women were

supposed to intensify and diversify food crop production while at the same time they were involved in colonial forced labour. To make it worse majority of the Agikuyu men could not assist them because they were involved in migrant labourers in European settlers' plantations. Hence the Agikuyu women carried all the burden of diversifying food crop production (Presley, 1992). The Agikuyu women had less time to concentrate on their food crop production and to keep their traditional farms especially those that were labour extensive attended to. Hence, women traditional status of using AWIKS to increase food crop production declined significantly.

In addition, the diversification of food crop production made the Agikuyu women of Kiambu to reorganize the types of food crop production they grew and perhaps the indigenous knowledge systems to produce them. They had to expand the growth of fast growing Irish potatoes, maize and beans, which also formed an important part of food crops for the Europeans and Asians. Other crops that were gaining recognition in the local market were onions, carrots, cabbages and a variety of vegetables in Kabete, Limuru, Muguga and uplands near the escarpment (Kitching, 1980). Consequently, women's traditional food crops exchange system with the neighboring communities was slowly displaced by European "official" markets (Waller, 2012). Traditionaly, the Agikuyu women's exchange systems provided a quick means of overcoming drought and famine since they used indigenous knowledge systems on food crop exchange to get enough food crops which were not available in Kiambu (Kitching, 1980).

Following the socio-economic changes that were taking place in Kiambu after the First World War , many Africans were unhappy with the continuous land alienation, forced labour with inhuman labour conditions, increased taxation, denial to grow cash crops, racial segregations educational services. They were also against government agricultural improvement programme and exploitative agricultural economic policies such as the Dual policy. Consequently the Agikuyu people reacted by forming Nationalist movements that were later used to champion their grievances (Aiyar, 2011).

5.2.3 Implications of the Nationalist Movements on AWIKS during the Interwar Period (1919-1939)

The colonial government created the Local Native Councils (LNC) after the economic of 1919- 1923 period to encourage the development of more permanent African political organizations. During the interwar period, the members began to have a deeper understanding of the structure of the colonial domination (Berman, 1992). The major motivation to the formation of nationalist movement in Kenya was the reaction against the privileges gained by the Europeans particularly with exclusive occupation of the fertile white highland (Aiyar, 2011). The political awakening after the WW1 motivated the African and the Indians to demand for respect for their rights and what followed were a series of meetings and protests against the colonial government. Africans formed political movements that were later used to air their grievances (Gachihi, 1986).

The Kikuyu Association which was formed in 1920 was pioneered by the colonial African elites, chiefs, and headmen from Kiambu. The Young Kikuyu Association led by Harry Thuku who was working as a clerk in the treasury, was formed a year later to defend African's land and labour rights (Thuku, 1970). Thuku was a young man who had massive support from other non-kikuyu communities from Nyanza, Kamba and Massai land most of whom were educated in Thogoto or in the African Inland Mission schools at Kijabe (Boahem ed., 1992). He was inspired by Gandhi's non-cooperation movement in India and therefore he sought an alliance with the Indians who were vocal in anti-settler agitations in the politics (Aiyar, 2011). However, the colonial administration was not pleased with Thuku's political agitation and therefore he was arrested and brought to Nairobi on 14 March 1922 on the grounds that he was a threat to peace and good order (Thuku, 1970).

Following his arrest, there was riots and mass demonstrations that gathered in Muranga, Kiambu and in Nairobi near police stations to demand for his release. The riots were mostly organized and sustained by the Agikuyu people particularly women. For instance, over two hundred women demonstrated near Norfolk hotel in Nairobi and most of them had come all the way from Kiambu (Erastus Muraya O.I, 2017). The colonial police shoot at the demonstrators killing at least hundreds of them mostly women (KNA/MA1/12/17, 1922). Gachihi (1986) observed that

although this riot was caused by the arrest of Harry Thuku, the underlying issue was intensified Agikuyu land alienation and government forced communal labour program. During the Harry Thuku's Riot tension and fear was very high, many Agikuyu men and women lost their lives during the confrontation and this implied that many Agikuyu people could not concentrate or move on with their normal lives and with subsistence food crop production practices.

This early involvement of the Agikuyu women into the nationalist activities put the Europeans on notice that women were not contented with their disruption of their traditional socio-economic systems and continuous marginalization and land alienation by the colonial government (Prisca Nyokabi, O.I 2018). This activism probably implied that the AWIKS on food crop production probably was neglected and underutilized because women were busy attending nationalist meetings and demonstrations and so they did not have enough time to concentrate in weather variation observation, seasonal calendar, to select quality seeds and food crop farming activities were abandoned for some period of time. Due to this participation in nationalist movements, some of the AWIKS remained dormant, others got lost as many women who held the knowledge and skills were killed. This may have disrupted the continuity and transmission of AWIKS to from one generation to another.

Furthermore, the European economic recovery policies during the early years of 1920s had encouraged exclusive occupation of White Highlands by Europeans. The Europeans had promised Africans and the Indians equal participation country's economy for their support in the First World War but after the war, the Europeans were reluctant to honor the promise. At the same time the European settlers began to push for legislation that would lower African wages by one third in 1921, and taxes (hut and poll tax) increased from six to sixteen shillings (Aiyar, 2011). This provoked a conflict between the Indians, Africans, and the European. The Africans and Indians felt that had been discriminated, hence they became more suspicious and assertive in criticizing the colonial administration (McGregor, 1927; Dilley, 1966).

The disagreement between the Indian and European settlers revolved around issues of land, immigration, racial segregation and political representation. The Africans

supported the Indians because they realized that just like them, the Indians were oppressed by Europeans. Led by Harry Thuku, Africans also demanded to be issued with title deeds for *githaka* (land) holders as a way of assurance of land rights, and against increased hut tax and the proposed to lower wages (Aiyar, 2011). However, the Europeans argued that it was unprofitable for them to rely on migrant semi-skilled Indians while they were capable of training African the same jobs done by the Indians. Further, they felt that the Indians had the right to do business in Kenya, but had no right to control it or even own land in agricultural productive areas (KNA/MA1/12/18, 1923; Dilley, 1966).

This led to serious confrontation between Indians and the Europeans that culminated in the signing of the Devonshire White Paper Declaration which was signed by the Indians and the Europeans. Therefore, after 1923 the country settled down for a period of economic development (Huxley, 1968). This conflict between the whites and the Indians had immense implications on the Africans, the continuous racial segregation and confrontation destabilized their ability to engage in effective traditional subsistence production. They continued to rely on forced labour low wages, to do their subsistence cultivation in unproductive marginal areas and to sell their products at low prices (Waller, 2012). This implied that the Agikuyu women's ability to practice traditional knowledge that enabled them to adapt to changing ecologies and to feed themselves during the drought was considerably undermined and neglected.

From 1924, a more visible and active Kikuyu Central Association (KCA) was formed at a meeting at Pumwani by Joseph Kang'ethe and James Beauttah and its headquarters was at Kahuhia Murang'a (Rosberg & Nottingham, 1966). Europeans inappropriately referred to the members of the Association as the "Left Wing" or extremist politicians, meaning those who refused to accept the government and missionaries attack on the Agikuyu indigenous practices (Tignor, 1976). Its main objectives were to get the alienated land, to protest against the oppresive colonial administration, and to regain freedom. According to a memorandum presented by Kikuyu Association to the East African Commission, it was estimated that in 1926 the organization had a membership of 200-300 young men and women (KNA/MA1/7/1, 1924-1928).

In 1928, Jomo Kenyatta became the general secretary and editor of its monthly Kikuyu vernacular newspaper publication *"Muigwithania"* or "Reconciler" which appealed to the Agikuyu people to revive and be proud of their cultural heritage and to work hard. *"Muigwithania"* undoubtedly provided a crucial vehicle in sensitizing Kikuyu masses in the increasingly politically charged inter-war atmosphere (Gachihi 2014). This actually meant that the future of the Agikuyu community was in continuation with their subsistence agricultural production, which was the only to free themselves from white domination (Kenyatta, 1965). Kenyatta also called the Agikuyu migrants labourers to go back to their traditional land and practice their indigenous food crop production in order to have enough food supply in their homes and to enrich themselves instead of continuing working for the European settlers as slaves (Berman & Lonsdale, 1992).

The *"Muigwithania"* newspaper was very instrumental in awakening cultural values and traditional livelihood of the Agikuyu people who strongly supported the Association. Kenyatta went as far as explaining that there was a big difference between living among Agikuyu people and knowing their traditional values (Kennyatta, 1965). This was a major milestone in the process of moving towards independence and African nationalist spirit. Members of KCA were of the view that the disruption of the indigenous subsistence production pracices had reduced the community's independence, values and cohesion due to large-scale displacement from their indigenous land (Erastus Muraya, O.I 2017).

Indeed, through the *"Muigwithania"* newspaper the KCA members injected nationalist awareness to the Agikuyu people, which stimulated a sense of community's identity and value. Their attitude reflected a level of support for egalitarianism expressed through some of the Agikuyu traditional values although some were increasingly subscribing to modernity (Gachihi, 1914). Therefore, KCA members fought very hard to retain women on the traditional farms as men engaged in migrant labour as part of their resistance by planning to stop women from participating in the soil conservation programme and road constructions. They felt that since the European settlers had already removed large numbers of men from the reserves, any communal labour program in the reserves meant that the majority of

those who were participating were women and that implied that they could leave their indigenous food crop production unattended (Ahlberg,1991).

The KCA members argued that if the Europeans manage to change the indigenous Agikuyu culture, they would completely implement their western cultural values at ease, and so their indigenous practices, skills and knowledge systems would be pushed to the periphery and become marginalized (KNA/16/3-6, 1924-1961). Even though the motive of KCA was to defeat government's agricultural programmes, its nationalist activities instilled in the mind of the Agikuyu people the value and need to renew the indigenous agricultural practices that traditionally made the community self-reliance and to liberate themselves from colonial domination (Berman & Lonsdales, 1992). This implied that no meaningful European capitalist development that could be attained when a community cannot feed itself. It also revealed that the Agikuyu women were doing most of the public works such as communal terracing during this and involvement in nationalist activities took a lot of Agikuyu valuable time, which could otherwise be used in proper utilization of IKS in subsistence food crop production.

In 1928, members of KCA presented their concerns on land, security of tenure and agricultural grievances in London through a delegation led by Jomo Kenyatta. The argument that was presented by Kenyatta was appealing to a few committee members in the House of Commons but majority were against it (KNA/MA1/5/1, 1929-1930). Those Europeans who were against KCA's concerns could not understand why Africans could not use their common sense and abandon their traditional way of life as it was 'uncivilized' (Leakey, 1954). However, the KCA radical members were not ready to hear the Europeans idea to use of "common sense" to abandon their cultural practices they instead they vowed to fight against European colonial domination and discrimination (Rosberg & Nottingham, 1966).

African nationalists, particularly those that arose during inter-war years, clearly demonstrated that they wanted to think for themselves and to decide what was good for the Africans. The emergence of cultural nationalism in the 1930s was a clear evidence of this (Gachihi, 2014). The KCA or *aregi/ Karing'a* members intensified the opposition by coming up with nationalist *Muthirigu* dance and songs. This dance

was first heard at Kabete area of Kiambu in October 1929 in an industrial school, the Native Industrial Training Deport (NITD). Here, it is estimated that about 2,000 young men and women frequently sang and danced, the officer in charge of the institution got angry and ordered the arrest of the group leaders (Ngugi, 1965). The song and dances were meant to condemn, ridicule and intimidate the European missionaries, settlers, government and their Agikuyu Christian supporters. Even though the nationalist activities developed tribal solidarity that ended up into political rebellion later in 1940s, the activities disrupted agricultural production in the area, which had considerable implications on the AWIKS on food crop production as shown in the table below.

5.2.4 Implications of Nationalist Mavements on the AWIKS on Food Crop Production

In this study it was observed that the involvement of the Agikuyu nationalist movement activities, meetings, demonstrations, songs and dances had a lot of implications on the Agikuyu women's indigenous Knowledge and skills on food crop production. Although the nationalist movements played a significant role in sensitizing the Africans on the importance and value of traditional institutions, the elevated tension and fear during the nationalist protests compromised the role of women in food crop production. Forty-two (61.9%) of the respondents believed that a lot of time was wasted by the Agikuyu people especially women during the involvement in the nationalist movements and protests (Table 18). This was vividly explained by Pauline Wangari one of the respondent from Limuru that as follows;

> "The AWIKS on food crop production was undermined since most of energetic men and women were involved in political struggle instead of using their valuable time on mastering weather variation in readiness for food crop plantation, land preparation, seed selection, weeding, harvesting and storage of food crops". (Pauline Wangari O.I 2017)

Thirty nine (57%) of the respondents claimed that most of the Agikuyu men and women were killed others disabled or arrested during the, Harry Thuku riot, KCA mass demonstrations and confrontations. While twenty (29%) of the respondents pointed out that high tension and fear that was being experienced during the nationalist protests and confrontations reduced the concentration of the Agikuyu

women in proper use of AWIKS in such areas as weather observation, land preparation, seed selection, weeding and harvesting of the food crops (Table 18).

Table 18
Effects of Nationalist Movement on the AWIKS on Food Crop Production

Effect	Frequency	Percent
A lot of time wastage, reducing time for utilization of AWIKS on food crop production	42	61.9
Most Agikuyu men and women lost their lives, disabled or arrested	39	57
Tension and fear reduced concentration on the use of AWIKS	20	29
Interviews conducted	68	100

From the findings it is clear that the Agikuyu subsistence production was disrupted and neglected during this period by the colonial dynamics, which may imply that the traditional Agikuyu women's indigenous knowledge system were not being used properly. This continuous disruption and marginalization of the AWIKS in food crop production resulted to reduction in food crop production in the household. However, it is important to note that the nationalist movements also provoked a feeling of solidarity and sought to retain women on the traditional farms as men engaged in migrant labour. This was a positive contribution towards sensitization and renewal of traditional agricultural knowledge and practices. Indigenous knowledge Systems of the traditional people was very effective in meeting their food requirements (Jiri, 2016),

5.2.5 Background to the Great Economic Depression and the Locust Invasion in 1930s

The interwar period also witnessed many economic and social challenges that greatly affected the AWIKS in food crop production. It is hard to pin down one single cause for the great economic depression because there was a number of factors and several theories that explain how the World economy collapsed but the fact is that the depression started when the Stock Market Crashed in October 1929. The investors panicked when the New York Stock Exchange collapsed abruptly and began to sell their shares in an unprecedented volume, which presented great turmoil for the country and the World (Kitching, 1976).

The Great depression sent shock through all the World market system, even though the centre of the economic crisis was in New York. This collapse of the World economic system led to drastic decline in colonial revenue. In industrial countries unemployment figures started to increase, demand for agricultural products declined, and demand for African labour market also declined (Sorrenson, 1967). African farmers were affected by the decline in agricultural products prices that was caused by the worldwide economic depression. The Agikuyu farmers in Kiambu disrupted by the general slump in peasant commodity prices because they had already been incorporated into the world capitalist economic system through the European colonialism.

The settlers in Kenya's white highland particularly in Kiambu shifted the burden of depression to the African laboures. The provincial administration increased hut and poll taxes in order to increase revenue income. This put the Africans farmers under considerable pressure to look for alternative sources of income as well as expanded production to meet their increasing taxes. On European plantations, Africans were forced to become tenants and squatters and could only rely on the income from the sale s of produce from their own plots other than from wage labour. The European colonialists realized that for a stable economic development of the colony, African agricultural economic production was to be developed.

Eyong (2007) stated that cooperation at all levels by all including indigenous people with differing knowledge systems was needed to meet economic demands and development needs. However, this renewal of traditional agricultural practices brought increased competition between the settler farmers and the Agikuyu farmers who were seeking to sell their agricultural food crop products in the local (black) market since they could no longer make a profit through export sales (Sorrenson, 1967). There emerged a struggle for control of the internal food crop produce black market especially maize and beans. The colonial government had to intervene in African food crop production by trying to directly encourage African commodity production as an alternative of export on the same line as those of the European and financial base for the colony (Waller, 2012). It is possible that this pressure, combined with physical deterioration and the sharpening internal competition had a significant implication on the AWIKS on food crop production. Since there was considerable

neglect of indigenous food crops production during this period, perhaps the proper use of AWIKS to produce them also declined.

According to Herbert (2000) & Warren (1991), when the depression was escalating, the economy of Kiambu deteriorated due the locust invasion. In 1928 a dense swarms of desert locust, the plague of ancient Egypt invaded the crops. They came from the North West along the sides of the Red sea or from the breeding ground of Eritrea and Arabia, Niger swamps and Southern Sudan (Herbert, 2000). The swarm of locust would settle on a field of maize, wheat, barley, indigenous millet, beans just ready for harvest and in an hour's time nothing would be left but waste of broken stalks.] Hezra Njehia lamented that;

> "Farmers saw whole of their crop cleared by the grass hoppers just as they were starting to harvest it…there was nothing they could do it was very devastating." (Hezra Njehia, O.I 2017)

The locusts destroyed everything that was green resulting to immense damage on the indigenous food crop supply in Kiambu. In 1929, the situation grew worse when locust hatched out everywhere and advanced ruthlessly over crops, pastures and gardens. They ate everything maize, wheat, barley, indigenous millet, beans, and grass. Consequently in the same year, the country was hit by one of the severest drought and famine which the people of Kiambu referred to as *"Ngaragu ya Itono"* (the locust famine) [Hezra Njehia, O.I 2017]. The colony spent many resources to fight locust and to relieve famine.

5.2.6 Implications of the World Economic Depression and Locust Invasion on the AWKIS on Food Crop production

The study shows that the Great Economic Depression had considerable implications on the Agikuyu food crop production, which in return affected the women's indigenous Knowledge and skills on food crop production. Twenty three (33.8%) of the respondents stated that there was a significant diversification of food crops farming in Kiambu such as maize variety, millet, sorghum and peas were still being grown in large-scale for commercial purpose (Table 19). Irish (English) potatoes were grown in large quantities in Limuru and the Lari areas for local market in order to increase colonial revenue during this period (Waithaka Njuguna, O.I 2018). Also near Dagoretti, Kikuyu farmers planted a variety of vegetables such as beets, onions,

carrots and cabbage which the sold in Nairobi and within the reserves alternative sources of income (Musalia, 2010). The reduction of fertile land for cultivation also explains the shift from growing of low-yield traditional cereals to horticultural fruits and vegetables that dominated Kiambu District in 1930s

Berman & Lonsdale (1992) stated that the colonial government's economic crisis during the Great Depression stimulated the further expansion of African peasant commodity production. The colonial government emphasised on restructuring African Agriculture to supplement the deteriorating settlers' agricultural production and to increase the colonial revenue (Kanogo, 1993). Indeed, while the European settlers agricultural production was shaken near collapse, African commodity production increased because colonial Agricultural department was encouraging intensive food crops production in order to ensure the increase in colonial capital. Evidence shows that countries that succeeded in managing disasters also used the indigenous knowledge of local communities affected by the disasters as a mitigating strategy (Iloka 2016)

During the Great Depression, the European governmet realized that the modernization of agriculture in the reserves could go hand in hand with expansion of their own commercial agriculture, although the then governor of Kenya Sir Joseph Byrne was still skeptical on African agricultural development (KNA/MAI/53, 1939). Hence, there was increase in the Local Native Council financed seed farms and demonstration plots. In 1928, a total of 21,780 kg of seeds were provided to the farmers by the Local Native Council, which was also training and paying for the farm instructors (Colony and Protectorate of Kenya Report, 1929). Waller (2012) observed that all these measures were meant to encourage the increased production of food crops such as maize, beans, vegetables, Irish potatoes and cash crops like cotton, wattle, and even coffee growing was permitted on a very limited scale in the reserves. However, it was noted that the traditional food crops such as cassava and yam were grown less extensively because they did not grow quickly and yams required a great deal of labour during harvest season.

Maize and beans were valued over millet since it had higher export value and because millet required a lot of attention since much energy was spend in weeding and scaring

birds during maturing season (Berman & Lonsdale, 1992). The emphasis in production commercial food crops led to significant abandonment of proper use of indigenous knowledge in the production of drought tolerant indigenous food crops such as sweet potatoes, yams, cassava, sugarcane, millet and sorghum. This put the community at risk of experiencing severe food shortages. Audefroy (2017) pointed out that community experiences in the past have made it possible to develop practices and methods as well as various habits that, they use as strategies of effectively preventing risk and disaster.

Additionally, 17 (25%) of the respondents observed that the AWIKS was affected more during the Great Depression when the colonial government introduced mixed cash and food crop farming in order to increase revenue and relieve famine, and to provide the farmers with food crop seeds that were of higher monetary value (Table 19). Indeed, Delamere viewed the "Single Crop Policy" that the European colonialist had earlier introduced in Kenya as dangerous and that it may have contributed to severe food shortage in Kenya. Therefore, in 1931 he argued the colonial government to diversify its crop production in order to include a variety of food crops as a strategy for agricultural improvement by encouraging the shift from relying on single crop to a more intensive mixed farming system (Huxley, 1967 & Kitching, 1980). As a result the government Agricultural department introduced mixed cash and food crop farming and a program of farm planning in 1930s.

There was increased production of the export crops such as wattle trees *(acacia decirrens and acacia mollisima)* and at the same time expansion of African food crop production. The Europeans argued that the wattle tree were useful to the natives in the sense that it provided the shelter around the huts, poles for house building, fuel and the sale of its bark (Colony and Protectorate Report of Kenya, 1932). This campaign encouraged increased production of Wattle trees in Kikuyu highland, which was also extensively cultivated in 1930s to conserve soil but it turned to be the worst soil exhauster (KNA/ PC/CP/4/1/1, 1932). Although wattle trees had been introduced in Kenya in 1903, the Agikuyu people grew it intensively in 1920s and 1930s and sold large quantities of its bark that made a light colored extract, which was used in tanning leather (KNA PC/CP/4/1/2/1932). In 1965, the Agricultural department also proposed to encourage planting of Pyrethrum in some areas of Kiambu on the steep

hillsides of Ndeiya and Lari escarpment and there was experimental small holding agricultural training at Jeanes School and Kabete (KNA/MG/11/48, 1969). Although it was poorly implemented, the program had considerable implications on the Agikuyu Women's indigenous knowledge and skills on food crop production.

During the study, it was noted that the Europeans also introduced western method of using demonstration plots on Agikuyu farms to train them on European farming methods. Use of farm demonstrations was a new idea that did not exist as in Agikuyu women's indigenous farming practices. However, the European demonstration plots were run on basis of integrating the indigenous rotational farming method and the mixed (cash & food) crop farming method (Kitching, 1980). The increased cultivation of food crops and cash crop such as wattle trees in the same land with food crops led to decreased of soil fertility because indigenous knowledge of fallow farming was not properly followed. Fallows were broken before the three to five years as required by the Agikuyu women to regenerate soil fertility and structure.

Buah *et al.,* (2017) stated that with food crop diversification and use of varying indigenous farming methods such as intercropping and proper fallow farming, farmers could significantly reduce the risks of crop failure providing farmers important safety nets in the event one crop fails to perform as expected. In addition, Agikuyu women's vast knowledge in observing weather change in readiness for planting food crops probably was disrupted during the Great Depression. It was reported that the colonial Agricultural Officers were instructed to keep records of the agricultural potential of altitudinal zones including observation on climatic conditions, which was a significant departure from the traditional AWIKS on weather observation in readiness for food crop plantation (Wanjiru wa Duati, O.I 2017).

Seventeen (25%) of the respondents also stated that the Agikuyu women's food crop production during the Great Depression involved selection of food crops seeds based on their high monetary value and labor requirement (Table 19). It was also noted that in some cases, the trained government agricultural officers determined the variety and quality of the food crops to be planted by the Agikuyu people. Seeds of the Hickory-King (flat white maize) were selected at Scott Agricultural Laboratories at Kabete for the improvement of high yield (KNA PC/CP 6/4/5, 1927-1932). This was contrary to

the pre-colonial set up where the Agikuyu women used their indigenous knowledge and skills to select seeds especially the grains based on their size, health and texture in order to get good yield and improved food supply in their households. In 1932 Maize, Irish (English) potatoes and horticultural crops were the highest selected for planting, while selection of the traditional millet, yams and sugar canes, sorghum, sweet potatoes was ignored because they had lowest monetary gain to the country (KNA PC/CP 6/4/5, 1927-1932).

The increased commercialized agriculture during the Great depression meant intensification of the women agricultural workload. Twenty five (36.8%) of the respondents mentioned that the Great Depression led to intensification of the Agikuyu women agricultural roles because many Agikuyu men had left the reserve to go and look for alternative income in order to meet the colonial tax demands. The Agikuyu women shouldered the bulk of responsibility and their agricultural roles increased because they also cultivated the male crops (Musalia, 2010). Six (8.9%) of the respondents stated that there was increased use of European farming methods and technology, which had a considerable implications on the AWIKS on food crop production (Table 19).

According to Berman (1992), by 1930s women were clearing the bush, hoeing, planting and harvesting the traditional men's crops like yams, which was a departure from their traditional agricultural roles. Additionally, it was noted that women planted crops that were of high monetary value but required less labour, which meant that the traditional crops like millet and yams were replaced and this led to neglect of some of the AWIKS on food crop production. It also made the community more dependent on marketable horticultural food crops and became more vulnerable to drought and food shortages.

Table 19
Effects of Great Depression and Locust Invasion on the AWKIS on Food Crop Production

Implications	Frequency	Percentage
Diversification of Agikuyu food crops farming	23	33.8
Introduction of new mixed commercial farming & selection of high monetary value seeds	17	25
Intensification of women indigenous agricultural roles	25	36.8
Increased use of European farming methods and farm implements	16	23.5
Locust destroyed the indigenous food crops	20	29.4
Interviews conducted	68	100

The colonial government felt that for it to increase the financial base through African commodity production, it needed to give attention to the use of European farm implements such as hoes, tractors and ploughs that were viewed as effective in increasing farm produce (Kitching, 1980).

Consequently, there was increased production of high market value food crops especially maize from 1930 to 1940 due to use of new European farming machines and implements and due to increased demand for maize both for local consumption and for export (Waller, 2012). However, it was noted that only a few wealthy farmers could afford to purchase the new European farm implements and the majority of the Agikuyu peasant farmers continued to use their traditional farming tools. However, it is possible that the useful role of the women's indigenous digging sticks and hand-hoe *(muro)* that gave them detailed knowledge of soil characteristic and therefore they were able to determine crop suitability was marginalized. This is because in most cases the Agikuyu women's indigenous farm implements and the knowledge system in using them were not suitable for large-scale food crop farming.

In late 1930s squatters declined and wage labour reduced rapidly compared to the previous decades. The number of Africans employed in the colonial plantation fell from 160,000 in 1929 to 132,000 in 1932 with the decline of European commercial farming (Kitching, 1980). It was noted that more Agikuyu families were forced to go back to their own agricultural resources. 1n 1934, Ndeiya region of Kiambu which had once been reserved for grazing was speedily occupied in the 1930 and its agricultural portions cultivated (KNA/DC/FH/5/1/1934). The study observed that

during the years of the Great Depression there was a general reduction in cash crop production due to the prevailing economic hardships and increase in production of commercial food crops (Table 20).

Table 20
Agricultural Export from the three Kikuyu District in 1932

Crop	Quantity in tones
Maize	36,905
Bean	6, 563
Irish Potatoes	9,973
Sweet potatoes	5,080
Millet	820
Yams	1,441
Sugar Cane	4,181
Wattle	9,017

Source; S.H Fazan in KNA/MAI/12/27, 1932

The findings shows that there was an enormous raise in quantity of production of commercial food crops such as maize, beans and Irish potatoes at the expense of indigenous food crops such as millet, yams and sweet potatoes. Jayne & Jones (1997) observed that the white maize was of great demand by British and its price was higher than the traditional yellow maize. It was further observed that by the end of the Great Depression, most indigenous drought resistant staple food had been neglected and the indigenous knowledge system in producing them reduced. Due to this neglect of indigenous crops the Agikuyu people became more vulnerable to inevitable drought.

5.2.7 Conclusion

The socio-economic changes that were taking place in Kiambu during the inter-war period had a considerable effect on the AWIKS on food crop production. There was intensification of land alienation and forced labour, the increased western education and agricultural instructions and inadequate monitoring of fragmented land resulted to a considerable underutilization of AWIKS on food crop production. The colonial effort to restore the agricultural export production after the WW1 led to increased use of African forced labour that led overloading the Agikuyu women with subsistence food crop production, domestic roles and as well wage labour. Consequently, they neglected and pushed to the periphery the indigenous knowledge systems as they were disrupted by their involvement in the nationalist movement meetings and

demonstrations. This period also witnessed the effect of the World Great Economic Depression and locusts invasion that immensely destroyed a lot indigenous food crops and deeply affected the agricultural commodity prices. The colonial government intervention to increase the colony revenue by encouraging African food crop production led to increased diversification of the Agikuyu food crop production, introduction of new farming methods and increased use of European farm implement, European selected seeds and agricultural officers and African Agricultural Instructors in order to improve food crop production. All this implied that AWIKS on food crop production was disrupted, underutilized and to some extent replaced with the European new farming methods and increased commercialization of agriculture. This meant that the supply of food crops in the households was also considerably reduced.

5.3 Implicatinons of Colonial Policies and Practices on the Awiks During the Decolonization Process (1939 -1963)

5.3.1 Introduction

Before the Agikuyu people of Kiambu had recovered from the shock of the Great Depression, they were once again plunged into the outbreak of the Second World War of 1939-1945. The Second World War that began in 1939 spread from Europe to every part of the World including Kenya where many strong bodied men and women were enlisted to fight for British army. This marked a major turning point in creating awareness to the Africans on the ideas of self-determination and freedom. Indeed, in the face of colonialism the Agikuyu people's indigenous cultural identity, traditional systems, norms and values were continuously ignored. Therefore, the 1940s and 1950s saw political tension rise high in Kenyans highland where the intensity of colonialism was greatly felt. This increased anxiety, anger and uncertainty led to the rise of political agitation that culminated into the formation of Mau Mau movement that spearheaded the struggle for Kenya's independence. Hence, the years of decolonization process 1945-1963 had remarkable changes that took place in Kiambu that had considerable implications on the AWIKS on food crop production. This chapter reports the implications of the Second World War and the Mau Mau War on the AWIKS on food crop production, and the effects it had on the availability of food in the household.

5.3.2 The Second World War

The Second World War (1939-1945) was basically European conflict where the British desired to control North and East Africa but the Africans participated in the war as both combatants and labourers (Mahajan, 2011). Initially the compulsory military conscription during the war applied only to Europeans although a numbers of Africans volunteered in the recruitment. However, in 1940 the Defense (Native Personnel) Regulations gave the governor power to order provincial commissioners to provide quotas of fit men for the army or for the East African Military Labour Service (EAMLS) [Clayton & Savage, 1974].

Many strong-bodied Kenyan men were enlisted to the EAMLS to engage in local construction work within East Africa for the military. Others were deployed in the African Auxiliary Pioneer Corps (meaning one of an advance party of soldiers) who served in the African East African Campaign in the Middle East in clearing and making roads, road repair works, and bridges for advancing armies in the battles (Zereza, 1992). They also travelled ahead of the main army preparing the way for it to move smoothly. Others were deployed to fight for British army as soldiers and military service men in the Combat seventh battalion of the King's African Rivals (KAR) or *Askaris* and specialists units were posted in Somalia, Ethiopia, Madagascar (where they fought French Units), in India and Burma (Clayton & Savage, 1974). All sorts of methods were used to recruit African labourers in both for the military and essential services. The proximity of Kikuyu land to Nairobi town, the then commercial center, gave Kiambu area earlier exposure to European exploitation than other parts of the country. Thus, the Europeans accessed most strong-bodied men from Kikuyu land for enlisting in the army with more ease than they did with other communities (KNA/MAI/12/33, 1939).

Many Changes were brought by the Second World War especially to the Agikuyu people of Central Province. The African soldiers who fought as combatants in the War especially the Kings African Rivals (KAR) received experience from the war, which broadened the general social and political horizons not only of the ex-servicemen but also many Africans who had remained behind (KNA/MA1/36/1942). They learnt that the Europeans were just normal people who could die, suffer, endure pain, or be defeated like other people. Furthermore, the war also encouraged

the ideals of self determination, freedom, and human rights, which Africans felt were not being put into practice in their country.

The African servicemen also got the idea of use of violence as the best way to solve their problems as Europeans had already done (Throup, 1988). According to Stratton (1991) the Second World War experience helped the Agikuyu people to heighten their political consciousness or agitation and most of war veterans like General China (Waruhiu Itote), Dedan Kimathi, Bildad Kagia, Fred Kubai among others could not hesitate to take up arms and fight for freedom and independence. It was reported that most of them were members of the old KCA movement that was banned by the government during the Second World War due to its increased political agitation (Margaret Wangari, O.I 2017)

The Second World War destroyed the economies of European countries and that of the colonies. Britain particularly was affected by the War because either a number of its consumer industries had switched to the production of war materials or they could simply not produce enough to supply their far colonies (KNA/MA1/12/34/1940). Therefore, there was need for European powers to expand their economies by encouraging local industrialization in Africa and there was no doubt that this move reorganized the Kenya's economic production, which was mainly based on agriculture (Berman, 1992). Moreover, the colonial government used the powers given to it by the 1940 Defense (Native Personnel) Regulations to reinforce coercive recruitment of labour for the army and for the private famers, the economic problems in the urban and rural areas were becoming intolerable, and majority of the political activists were arrested while others were deported (Zeleza, 1992).

Berman (1992) pointed out that during the Second World War the African reserves were depleted by war time production demands and at the same time they were reaping the bitter harvest of internal contradictions and policies of previous years. This period also experienced profound agrarian crisis, physical and social deterioration of the African reserves. According to the District commissioner of Fort Hall, the colonial government complained that it was almost impossible to govern in these areas because of the growing political agitation and resistance

(KNA, DC/FH/I, 1947). Therefore, the Second World War demand, the accumulative efforts of colonial discriminatory agricultural policies and the failure of maize due to the insufficient rain in 1941 may have contributed to reducing the capacity of using AWIKS on food crop production, which probably led to a serious food shortage.

5.3.3 AWIKS during the Second World War (1939-1945)

This study established that the Second World War (WW11) had profound implications on the Agikuyu Women's indigenous knowledge systems on food crop production. Forty (58.8%) of the respondents mentioned that during the Second World War there was a great labour reorganization that was caused by a serious shortage of labour (Table 21). This was a result of the large number of African men who were conscripted or enlisted in the army services which drained labour from the community. In general, Kenya African men migrated to Nairobi and Mombasa in large numbers during the Second World War as an attempt to escape from conscription (Stichter, 1982). Ndeda (1993) also noted that the effect of male migrant labour was also felt Luo Nyanza where Luo men ran away from home to avoid conscription. According to the labour commissioner's report of 1939-1942, between September 1941 and December 1942 over 50% of the labour force was on registered employment, 10 % was estimated to be on unregistered employment in the army and 10% was working in the reserves and that the conscription led to 6,000 voluntary workers in the army (KNA/ DC/MKS/ 10B/1, 1942).

Further, Shiroya (1985) observed that by 1940, 98,000 Kenyans were serving in the military in various capacities. Verwimp (2012) stated that when rural African communities is affected by war, their food security is jeopardized because they produce food crops for their own consumption, therefore the disruption of the production process or the inability to cultivate directly affect the command over food of the household members.

The above observations imply that the Agikuyu traditional division of labour was disrupted considerably during the war since majority of the Agikuyu men were conscripted into the war. The Agikuyu women took over most of the food crop production roles that were initially performed by men and at the same time they

were extensively involved in producing commercial crops such as maize, wattle, pyrethrum, tea and coffee, and also they were searching for wage labour in urban center to supplement their subsistence production. It is possible that the withdrawal of an important part of Agikuyu traditional agricultural labour from the reserves had a negative impact on the AWIKS on food crop production as one of the respondent lamented.

> "Agikuyu women were overloaded with both household chores and producing food crops for marketing, they engaged with almost all agricultural production, which reduced their capacity to concentrate and utilize properly the AWIKS"(Virginia Wanjugu O.I, 2018).

Therefore, lack of proper utilization of the AWIKS on food crop production implied that there would be a significant decline in food crop production. Indeed by February 1943, the Defense (Native Personnel) Conscription Regulations was stopped following a severe food shortage that was being experienced in Ndeiya and Kikuyu Karai reserves in 1942-1943 (KNA/MA1/12/37, 1943). This confirms the respondents statements that indeed there was some connection between extensive removal of labourer from subsistence farming and reduced quantity of food crops that was available in the households

Findings also show that 45 (66%) of the respondents observed that the Second World War had considerable effects on the AWIKS on food crop production because of the serious neglect of food crops production due to shortage of manpower in the reserve and at the same time there was high demand for food supply to the military servicemen (Table 21). Clayton & Savage (1974) confirmed this as they observed that indeed this period was referred to as the *"Panya Kuu",* or the time of the rats, when rats were eaten in some areas of Kenya due to acute food shortages. Ndeiya area of Kiambu was the most affected by the food shortage in 1943 (KNA/MA1/12/37, 1943). It was reported that between 1942 and 1943 the people of Kiambu experienced a serious food shortage which they referred to as the Cassava famine *(Nga'aragu ya mianga)* because they were only eating cassava flour which was being provided for by the government (Throup, 1988; Erastus Muraya O.I, 2017 & Hezra Njehia O.I 2017). Farmers in North-West Cambodia also grew cassava as a drought-resistant crop to reduce vulnerability to drought (Touch *et al.* 2016). It was ironical tht the indigenous

drought resistant crops that were ignored and undermined by Europeans were now being used to reduce the severity of the famine.

Food Shortage Commission was set by the government and restrictions were put in place to limit the distribution of maize and the export of food from the reserve (Throup, 1988). The colonial government also introduced the food-rationing programme which began in March 1943 where community's consumption of maize, wheat, bread and rice were controlled (Clayton & Savage, 1974). It is possible that the exposure of the Agikuyu women to the Second World War pressures and food crisis led to reduction in production of many indigenous food crops and indigenous knowledge system that Agikuyu women utilized to production them. Lack of adequate use of indigenous knowledge systems on food crop production contributed to the acute of food shortages in the household (Elizabeth Nyagaki O.I, 2018). It also undermined the Agikuyu women's role on food crop production.

Table 21
Effects of the Second World War on AWIKS

Effect	Frequency	Percentage
Agricultural labour disruption and women overburdening limited time for indigenous agricultural practices	40	58.8
Neglect of food crop production and high demand of food supply	45	66
Settlement of squatters in new areas away from White highland undermined the AWIKS on food crop production	12	17.6
More land alienation by ex-soldiers resettlement programme disrupted & undermined the AWIKS on food crop production	37	54
The soil protection communal labour negatively affected AWIKS	13	19.1
Interviews conducted	68	100

The Second World War demands, together with the increasingly labor demanding cash economy worsened the situation. In November 1941 there was a call for increased food crop production for the supply in the Middle East railway constructors and the agricultural Production and Settlement Board was set up to ensure increased food crops production (Zeleza, 1992). The Board came up with minimum prices for food crop products especially maize for both Europeans and

Africans. The European Maize was to be sold at the highest price while the African maize was set at the lowest level (Spencer, 1980). This discouraged the Agikuyu people from producing maize for export and instead they concentrated on producing maize and other food crops for local consumption and for local market (Kitching, 1980).

Additionally, the Increased Production of Crop Ordinance and Defense ordinace was passed in 1942 in order to control maize production (KNA/BV/6/95, 1943). The regulation also encouraged the Agikuyu of Kiambu to continue adopting and quickly integrating the European marketable food crop such as wheat, maize, Irish potatoes, tea, European cabbage, kales *(sukuma wiki)*, rice, and barley.

The production of such cash crops as coffee, tea, pyrethrum and sisal was guaranteed high prices through contacts with the Ministry of Food in Britain (KNA/DC/MKS/10B/1, 1942; Robertson, 1997; Berman, 1992). All these regulations probably implied that many Agikuyu household could abandon some of the traditional knowledge in subsistence food crops production and therefore many children and young people did not adequately learn some of the traditional skills of seed selection, weather observation, weeding, harvesting and storing the food crops. It is possible that this accelerated the downward spiral of abandonment of the some of the AWIKS on food crop production.

Twelve (17.6%) of the respondents stated that the AWIKS on food crop production was also affected when the squatters were resettled farther away from their homes when the Squatters Settlement Schemes were created mostly on remote and edge of Kereita forest, Lari and others as far as in the Rift valley in 1941 (Table 21). The colonial government's move to resettle squatters in the newly created settlement schemes implied that some of the Agikuyu people from Kiambu would become victims of the eviction from the crowde White highland, which resulted to a complete displacement and reorganization of their agricultural practices and social set up. Kanogo (1993) confirms this by explaining that the growing population pressure in the squatter land within the white highland had threatened the reduction of farm sizes and agricultural production practices. It is possible that limited access

to agricultural productive land and the reduction in land sizes may have reduced the capacity to utilize fully the AWIKS on food crop production.

It is possible that this led to increased anxiety and insecurity because the Agikuyu squatters felt that they had been reduced to tenants (*Ahoi)* on the other families where access to agricultural productive land and growth of variety of traditional food crop production was restricted. According to Clayton & Savage (1974), the 1939 Resident Labourers Ordinance came into force in 1940 and the colonial administrators used it to resettle the excess number of squatters in Over 30,000 acres of land that had been set aside for that purpose. Each Squatter was to be granted 8 acres of land and the government gave directives on how the land was to be utilized and new settlement agricultural rule were imposed in 1942 (Kanogo, 1993; Branch, 2009). It is possible that during the process of squatter's resettlement, some of the women indigenous knowledge systems on food crop production were neglected because the Agikuyu women lacked familiarity with the new ecological zones and and enough land for practicing the indigenous farming methods. As Kanyuira from Limuru stated;

> "Agikuyu people were very devastated when the government ordered the chiefs to remove them from the squatters land in the settlers' farms. People were caught unawares and they did not have money to resettle elsewhere since they depended on wages which was very low. Some used to cultivate food crops in lager pieces of land in settlers farms than the land in the reserves. This truly disorganized their food production systems" (Hannah Kanyuira O.I 2017).

The study, observed that the colonial settlement scheme rules also had detrimental consequences for the Agikuyu indigenous food crop production. Kanogo (1993) observed that the squatter settlement scheme rules stated that out of the 8 acres granted to each squatter, only two and a half acres could be cultivated and all land would be cultivated continuously for less than four years. Two and half acres were supposed to be used for food crop production, and the remaining five and half acres of land could be used for communal grazing. New crops such as wheat and vegetables would be grown in rotational while maize was banned because the area was extremely cold and unsuitable for its cultivation (KNA/MA1/7/9/1940-1941; Kanogo, 1993).

According to minutes of a Baraza held at Olenguruone in octomber 1946, the Agikuyu people who were resettled at Olenguruone from Kiambu argued that the government had removed them from "their lands" and therefore they wanted compensation for the lands they had left in Kiambu. However, the government claimed that the resettlement schemes were a part of "rescue mission" and therefore the resettled people should be grateful (KNA, PC/RVP/6A/1/17; 1946). The Agikuyu people bitterly resented the colonial settlement scheme's agricultural rules since they viewed them as oppression and that the rules reduced them to the status of *ahoi* and slaves (KNA, PC/RVP/6A/1/17, 1946; Berman, 1992). Nevertheless, colonial settlement rules were imposed, a move that had negative implications on the AWIKS on food crop production. It reduced the land for indigenous food crop production practices and the tramsmition of the indigenous practices was interfered with. There was a breakdown of strong Agikuyu family and community ties as some of the relatives lost contact with each other. Therefore the social structures which generated the AWIKS were slowly broken down.

The above colonial Settlement Scheme agricultural rules resulted to a complete reorganization of the Agikuyu agricultural practices in many ways. The colonial government's continued to stress on the importance of mixed farming (crops and dairy farming) and crop rotation in the new settlement areas of Lari Kambunge area during the Second World War (KNA/MA1/7/9, 1940-1941; KNA, PC/CP/9/24/6; 1937). It was reported that in these new ecological settlement schemes, most of the Agikuyu women were not familiar with the weather and climate pattern variation, the suitable crops to grow in the steep valleys and extremely cold areas (Wangari Mbutia, O.I 2017). They also lacked systematic records on suitable local knowledge and skills for that specific area which made most of the AWIKS they were originally utilizing in their original farms in Kiambu irrelevant and vulnerable. The Agikuyu women's indigenous knowledge in food crop production was eroded significantly because there was no systematic intergenerational transmission that took place due to the colonial reorganization of the agricultural practices and regulations that interfered with their traditional practices. Biggs *et al*. (2018) pointed out that lack of indigenous knowledge in geographic variability and climate prediction together with low levels of coping and adaptive capacity could led to high levels of vulnerability for marginalized farmers.

Additionally, many Agikuyu women in the squatters' settlement schemes were using the farming methods and agricultural practices that were being dictated by the European colonial regulation. The Europeans strongly encouraged mixed farming, crop rotation, use of fertilizer in the farm, terracing and cross-contour planting and this meant that traditional intercropping and fallow farming was disregarded. It is possible that the traditional food crops such as grains, cereals, yams, sweet potatoes were neglected and the indigenous farming methods declined in these areas (KNA/MAA/6/14, 1949). Perhaps because either the climate or soil was unsuitable for cultivation or because the European colonial government encouraged the squatters to cultivate the food crops that had commercial utility such as European vegetables, Irish potatoes, wheat that slowly displaced the indigenous crops. By 1945 a remarkable change in farm implements had taken place, the traditional farm implements had been replaced by *jembes* and ox-drown ploughs. Srivastava *et al.* (2016) observed that land degradation, erosion of traditional agricultural knowledge and decline in human health and livelihood are caused by excessive use of agrochemicals, machinery and adoption of high yield commercial crops.

5.3.4 AWIKS after the Second World War (1945-1952)

The findings of the study showed that the post Second World War years were marked by recovery from the Second World War strain and reconstruction of European settler's agriculture in Kenya. It was a period of resettlement of the ex-servicemen who had assisted the Europeans during the Second World War. Thirty seven (54%) of the respondents stated that the resettlement of the ex-servicemen after the war led to continuous intensification of land alienation in the highland which undermined the proper use of AWIKS on food crop production (Table 21). At the end of Second World War, the government promoted peaceful settlement of its armed forces and assisted the ex-servicemen to purchase land in Kenya.

According to Robinson & Madden (1963), the administrators also ensured that the ex-soldiers who returned to the reserves and in the villages could not use the skills gained from the war for dissident activities. The then chair of Agricultural Production and Settlement Board Cavendish Benstinck came up with suggestions for the settlement of the African ex-servicemen. He proposed that the colonial government to assist in the purchasing of land for the ex-servicemen and to loan

them funds for developing their farms and give them agricultural training. Egerton College was among several others agricultural institution for imparting ex-servicemen with agricultural skills (KNA, MAA/2/49-1, 1946).

The return of Second World War ex-servicemen in Kikuyu land had far reaching consequences on the AWIKS on food crop production. It meant further acceleration of land alienation where hundreds of acres of Agikuyuland was taken by the colonial government in order resettle ex-servicemen and give them land where they could develop their own farms (Zereza, 1989). This implied that the women continued to loss access to their tradition land use for food crop production. in the process of settlement of the ex-servicemen there was destruction or displacement of the women's indigenous food crops, which undermined Agikuyu women's role on food crop production. Europeans weakened the Africans indigenous subsistence production practices for their own capitalist economic develeopemnt.

In addition, this study also noted that this period also experienced transformation in agriculture in the reserves. Thirteen (19.1%) of respondents mentioned that during the post Second World War the Agikuyu women's food crop production was negatively affected by the soil conservation compulsory communal labour (Table 21). Women in Murang'a raised and continued with protest against communal terracing forced labor (Gachihi, 1986). However, there were other underlying issues such as congestion in farming land all the reserves in Central Province as more land was being alienated by Europeans. Berman (1992) confirms that during the first five years after the Second World War, the government came up with intensive soil conservation and soil fertility restoration programme in the reserves. This included the communal contour terracing, planting of nepier grass, destocking, crop rotation and use of fertilizers (Stichter, 1982; KNA, MAA/2/49-1, 1946).

The colonial government had realized that a significant economic development could not be achieved when the reserves were neglected in deplorable conditions and without assurance of sufficient food supply (Berman, 1992). The policy on the communal labour enforcement implied that majority of those who participated in the communal labour were the Agikuyu women because many men had already been removed from the reserves during the colonial period (Ahlberg, 1991). Although during the pre-colonial time women used to terrace their farms as an indigenous

knowledge strategy of conserving soil in order to improve the food crop yields, the colonial communal terracing was mainly used for public projects. Such communal labour so demanding such that it was stopped in Nyeri for a certain period to enable the people to plant food crop (Elkins, 2005). This possibly meant that Agikuyu women had diverted their energy from food crop production to playing a significant role in government's public works leading to continuous neglect of the AWIKS on food crop production.

After the release of KCA members from detention, Eliud Mathu was nominated to the Legislative Council (Kaggia, 1975). Soon after, a number of elite Kenyans met in Nairobi with Eliud Mathu and unanimously agreed to launch the Kenya Africa Study Union (KASU) which later became Kenya African Union (KAU) [Kenyatta, 1965]. The former KCA members were quick to rally their support behind KAU under the leadership of Kenyatta who tried to develop a national consciousness through political education.

The KAU radical members also sought to form a progressive trade union movement the East African Trade Union Congress (EATUC) which they used to express their workers grievances (KNA/MA1/12/47, 1953; Spencer, 1980). Between 1947 and 1948 the political agitation in the area heightened, the ex-servicemen, ex-soldiers, landless squatters, unemployed in the reserves were embittered and resentful by the colonial government's discrimination against them and the deplorable conditions in the reserves. This led to a deepening sense of anxiety, frustration and alienation among many Agikuyu people which culminated in the Mau Mau confrontation in the 1950s (Kinyati, 1980).

During the study it was established that although the Agikuyu women were not involved directly in the local leadership of these male dominated political unions and trade unions, the period between 1947 and 1948 saw massive women participation in the protest against harsh European agricultural betterment schemes such as communal terracing, forced labour and cattle dipping schemes. Indeed, the Intelligence Reports for Fort Hall, April 1948, indicated that women later abandoned the forced communal terracing work following a KAU meeting resolutions of 20thJuly 1947 (KNA/ MAA/2/3 /16/11, 1948). This meant that women were forced

to leave their daily work of food crop production to go and join political protest against Europeans colonialist. It is possible that due to this extensive involvement women's traditional use of indigenous knowledge systems on food crop production was highly disrupted.

5.3.5 Background to the Mau Mau War

There are different explanations on the origin of the Mau Mau War in Kikuyuland. Some African Scholars view the Mau Mau as an outlet of shock of radical changes in the Agikuyu lifes. It was characterized bitterness, anxiety, tension and an ideological conflict and contradiction. While most of the European settlers and administrators tried to justify the European position in Kenya in their accounts of the origin of Mau Mau insurgence. Carothers (1953) and Frost (1978) argued that the Mau Mau was a desperate move by Africans to go back to their pre-colonial ways of life, and that it was nothing more than a barbaric movement aimed at imposing terror in the country.

Leakey (1954) views that though the Africans had genuine grievances, the Mau Mau was fundamentally not a political or economic protest, but a kikuyu civil war between modernists and debased traditionalists. Huxley (1948) & Blundell (1964) discredited the Mau Mau genuine grievances of land and freedom, they indeed dismissed the Mau Mau as having no real economic or political grievances while Frost (1978) also views Mau Mau as a civil war, which was against the European colonialists and any other person who stood between them and the regaining of their lost freedom. Clayton (1976) further stated that Lari division of Kiambu was very significant in 1952 because it is there that many Agikuyu people were converted to beliefs in the evils of Mau Mau savagery and that the essential nature of Mau Mau was a Kikuyu civil strife.

From the above explanations about the origin of Mau Mau war, it is possible that the movement arose from the increased African discontent, frustrations, bitterness, anxiety and anger towards the deteriorating living condition, continuous land alienation, loss of freedom and the colonial government continuous ignorance of the Africans grievances. Gachihi (1986) indicated that the Mau Mau was a movement that demanded back the alienated land and freedom, which was the main resource and source of the Agikuyu people's indigenous livelihood and food crop production. Since

the Agikuyu women were the main custodian of food crop production in the traditional pre-colonial set up, it was possible that the Agikuyu women would strongly support the Mau Mau fighters so that they could get back the indigenous land, where they used to cultivate food crops using their indigenous knowledge systems.

5.3.6 Effects of Mau Mau War on AWIKS in Food Crop Production

The state of emergency was declared on 20th October 1952 following the assassination of senior chief Waruhiu Wa Kung'u who was one of the most loyal and dependable senior colonial administrator in Kiambu District. Waruhio did not believe that Africans were ready to govern themselves and therefore he was considered as a traitor by his fellow Agikuyu people (Rosberg & Nottingham, 1966). The colonial government alleged that Chief Waruhiu was assassinated by the Mua Mua group that had already been blamed of arson and other killings. Immediately after his assassination, the colonial government declared the state of emergency and orderedthe arrest and detetion of over 100 African political leaders and Mau Mau sympathizers a move that caught the Mau Mau unprepared.

The police report indicated that between May and October 1952, at least 40 people had been brutally murdered many of them were European loyalists (the African chiefs and government soldiers) an animals in the European farms were mutilated, brutally slashed [KNA/MA1/12/46/1952]. This forced the colonial government to confront the radical Mau Mau insurgent group in Kikuyu, Meru and Embu Districts through massive force from the Kenya Police, provincial administration, local units of the Kings African Riffles and other British army battalions (Berman, 1992; Castro & Ettenger, 2015). The colonial government killed the Mau Mau rebels through public hanging and mutilation including cutting off the tongue (Elkins, 2005, Castro & Ettenger, 2015).

The most dreadful massacres were the Lari Massacre of 1953, which claimed the lives of 150 Mau Mau suspects; the Chuka massacre of 1953 that claimed the lives of 20 adults and a child; and the Hola massacre of 1959 that resulted in the killings of 88 detainees (Anderson, 2017; Karari, 2018). Most of the Agikuyu women who sympathized with the Mau Mau were also killed and others were seriously injured or

wounded to an extent that they could no longer continue with normal food crop production as Wanjiru wa Duati stated

> "Many men and women who had not taken the Mau Mau Oath were beaten during the day on 13th April 1953, they were then taken to *Mai ma Nyoni* where they were massacred in masses" (Wanjiru wa Duati, O.I, 2017)

Many Agikuyu people in Kiambu mostly the Mau Mau fighters and some Home Guards who were killed were buried in mass in channels at Thigio police post in Ndeiya location, Kireita forest, and at Ruthigiti in Kikuyu (Margaret Wangari O.I 2017).The colonial government feared the spread of Mau Mau subversive activities to other tribes in the country, and it moved to repatriate Kikuyu, Embu, and Meru from settler's estates and towns to reserves (KNA/MA1/12/46/1952). Consequently, by the end of 1953 there was increased number of refugees into the already overcrowded reserves where they relied on government assist for survival. This encouraged thousands of young men from Kikuyu Districts and reserves to move in to the forest in support of Mau Mau to escape the brutality of security forces. Thirty (44.1%) of the respondents mentioned that the massive loss of energetic men and women from the kikuyu Districts and reserves affected the traditional role the Agikuyu in food crop production (Table 22).

This implied that women who were living in the overcrowded reserves and villages felt the pressure of ever diminishing land and most of them were overloaded because they took over the male agricultural roles. This distracted the normal food crop production process and the proper use of indigenous knowledge systems on food crop production resulting to decline in availability of food in the families. The situation deteriorated rapidly during the State of Emergency, and mass assassination was already taking place in most of the Agikuyu reserves and the Agikuyu traditional way of life came to a stand still.

Wamoro wa Nderi O.I (2017), reported that all this massive killing of the Agikuyu people reduced women work force who would continue with food crop production in the reserves. This resulted to the severe food shortages that were experienced in Kiambu in 1954-1955 (Kinyati, 1980). Women often worked in Mau Mau counterinsurgency forced labour program from dawn to dusk until such projects were

completed (Davison 1989). Some Agikuyu women resorted to actual begging for food from the Home Guards in order to feed their children (Gachihi, 1986; Anderson, 2017).

Table 22
Effects of Agikuyu Women's Involvement in Mau Mau on AWIKS on Food Crop Production

Implication	Frequency	Percent
Massive loss of the energetic Agikuyu people reduced food crop production workforce	30	44.1
Immense Destruction of food crops and storage facilities	44	64.7
Neglect of use of AWIKs due to women's serious injuries and fear	22	32.4
anti-colonial dances and oath taking ceremonies consumed a lot of time	12	17.6
Reduced contact between the older and younger generation	13	19.1
Total interviews conducted	68	100

Davision (1989) described how women of Mutira were "running" to their *shambas* after being released from forced labour. They speedily cut down the maize for cooking that evening, cultivate a small area, then go back running to complete their forced labour assignment (Davison, 1989). Therefore, the absence of Agikuyu women from their traditional *shambas* due to insecurity, serious injuries or due to fear and lack of time led to neglect of AWIKS such as observation of crop rotation, shift cultivation and proper selection of quality seeds.

> "During the Mau Mau War, the Agikuyu women could not have adequate time to concentrate in some of the traditional methods of cultivation due to lack of enough time to attend their farms" (Wanjiru wa Duati, O.I 2017).

According to 44 (64.7%) of the respondents, the colonial government also used hunger as a weapon against the Mau Mau fighters and their supporter, all the food crops in the *shambas* were destroyed and grain granaries were burnt to ashes (Table 22). This immense destruction of the food crop and properties disrupted the normal subsistence food crop farming. KNA/MA1/12/49/1955 reported that the District Commissioner of Kiambu in 1955 issued an order in July 1955 that any crops that were likely to be a source of food (bananas, sugar canes, sweet potatoes, arrowroots,

cassava and maize) for the Mau Mau fighter and their supporter that were in the *shambas* must be slashed, destroyed and burnt.

> "Immediately all crops in *shambas* were cleared on allegation that Mau Mau fighters were hiding there and granaries where dry food crops were stored were burnt completely" (Prisca Nyokambi O.I 2018).

This order meant that a lot of indigenous food crops were intensively damaged which led to drastic loss of indigenous crops such as bananas, sugar canes, sweet potatoes, arrowroots, cassava and maize, and cohesion in the indigenous knowledge and skills used by the Agikuyu women to produce them. The plot for each family was roughly a quarter-acre which was not sufficient to produce food for a family and therefore food production went down (KNA/MAA/8/96, 1952). Consequently, this contributed to increased decline in food supply in the household, which was evident by the severe food shortages in 1952-1954 in Kiambu (KNA/DC/MUR/3/2/1943-1953).

Similarly, 12 (17.6%) of the respondents stated that during the Mau Mau war there was also time lost by men and women singing the abusive anti-colonial dances and in oath ceremonies which could have been used for food crop production (Table 22). Kinyati (1980) reported that the anti-colonial songs and dances expressed strong ant-colonial sentiment and Mau Mau's legitimized the claim on alienated land and freedom and also stirred a feeling of solidarity. Agikuyu women joined such anti colonial dances because they were also frustrated by loss of land and subsequent right to access and use it. These Mau Mau patriotic songs were practiced in late hours of darkness. Gachihi (1986) and Castro & Ettenger (2015) reported that the increased crime, communal punishment, rampant murders and lack of a safe place to run drew the Agikuyu women into active participation in Mau Mau war.

The Mau Mau leaders initiated women who became members of the movement through administration of an oath. The oath was supposed to cleanse away all self-consciousness under all circumstances. The oath itself emphasized against disclosure of the Mau Mau undertakings to the government or any European and the sale of land to any European (Carother, 1955, Anderson, 2017). A significant number of men and women took the oath of Unity *(Umoja)* at Githunguri College. They were

referred to as *Anake a forty* or the forty groups, which included the traditional initiatory age groups of *kinyotoku, kimiri, munanda and shiringi*, and majority, were KAU members (Clayton, 1976). The first official report of the Mau Mau oath taking ceremonies was in squatter land on European farms in the Rift Valley as early as 1948 then it spread to other parts of Kikuyu (KNA/MA1/12/46/1952).

The process of recruitment in Mau Mau membership involved the taking of oath of unity, which was an elaborate initiation ceremony that united all members of the movement (Leakey, 1952; Carother, 1955; Ng'ang'a, 1977). The ceremony that took almost a day in deep parts of the Lari forest had far reaching effects on converting many Agikuyu people to believe in the Mau Mau activities. Wanjiru wa Duati (O.I, 2017) from Lari-Kabunge a Mau Mau freedom fighter claimed that many women volunteered to take the general oath of unity, while a few courageous ones like her went to the forest Kereita and Aberdare forest to take the oath of *Mwito wa Lari* in Upland where they vowed to keep Mau Mau secrets. However, it is important to point out that not every Agikuyu women who took oath was given an active role in the Mau Mau war (Gachihi 1986). Only those who proved that they were reliable could be entrusted with Mau Mau secrets. Those who were considered loyal were recruited to perform various roles in the Mau Mau war (Gachihi, 1986; Presley, 1992b).

The administration of the Oath to women and Children was uncommon in the traditional Agikuyu setup. However, Kenyatta (1965) emphasized that women were taking the oath in absolutely necessary circumstances. The Oath taking ceremonies consumed a lot of valuable time for the Agikuyu people and also instilled fear and anger in Agikuyu women. Kershaw (1977) pointed out that the colonial government was very suspicious about all the Agikuyu people and viewed them as guilty of a crime. The colonial government argued that those who had not taken an oath were also guilty of Mau Mau crimes because they had not prevented others from not taking (KNA/MAA/8/96, 1952). Therefore, it was difficult for the whole community to continue with their normal traditional subsistence food crop production. Twenty two (32.4%) of the respondents mentioned that the time soent in oath taking process undermined women's role of indigenous knowledge systems on food crop production (Table 22). Furthermore, it is possible that the actual existence of the

Agikuyu women Indigenous Knowledge and skills in food crop production was disrupted by the War and Massacre due to massive loss of life and displacement of the Agikuyu people.

Although women role in the Mau Mau movement has not been satisfactorily recognized, they played very significant supportive roles that were assigned to them by the Mau Mau fighters. Forty one (60.3%) of the respondents pointed out that the Agikuyu women's roles in the Mau Mau war disrupted the AWIKS on food crop production. Women left behind their traditional roles, their children and their families to join the Mau Mau activities and their food crop production practices were completely disrupted (Table 22). According to Gachihi (1986) & Presley (1992 b) the Agikuyu women were recruited as couriers of important information and they did very well to retain contact with the fighters. They further note that those who were near towns got information through spying from the government offices and European households, and those were near the forest were providing food and sometimes shelter to the Mau Mau fighters.

In some cases when the Mau Mau fighters raided the villages and the reserves and carried all the food stuffs and other items such as clothing and blankets Agikuyu women were forced to carry the items into the forest (Gachihi, 2014). Once in the forest women were forced to transport those provisions between camps as fighters were often on the move. Those women who were in the forests in 1953-1954 were frequently sent to make contacts in the reserves and to arrange for provisions the Mau Mau needed (KNA/MAI/12/48/1954). Furthermore, Presley (1992 b) reports that women leaders in the reserves organized small secret women network for collecting food, weapons and other provisions such as medicine, police uniform, faked or blank passbooks and dispatching them to the fighters. Most of these roles were made in secret and in fear, carriers of provisions usually made their journeys at night and were supposed to be back by dawn to avoid detection by the Home Guards (Castro & Ettenger, 2015). This was an indication that the Agikuyu women could no longer concentrate with proper use of indigenous knowledge or move on with their traditional food crop production roles.

According to the findings of this study, the Agikuyu women's active participation in the Mau Mau movement by keeping alive through material and moral support had significant implications on the AWIKS on food crop production. Given that the Agikuyu women spent a lot of their time performing the roles that were assigned to them by the Mau Mau fighters such as spying, collecting material provisions for the Mau Mau fighters, it is possible that most of them shortened the time for involvement in intensive and proper use of indigenous knowledge in food crop production. Others neglected the cultivation of their gardens. This disrupted and undermined the women's role in use of the indigenous knowledge in food crop production such as weather observation, seed selection and proper methods of indigenous farming, seasonal calendar and harvesting.

It also reduced contacts time for learning and transmission of AWIKS on food crop production from the older women to the younger women's generation. As a result there was a significant lack of cohesion in indigenous food crop production skills implying that the little knowledge system learnt during this time could not be practiced immediately because of political instability. The AWIKS in food crop production was therefore neglected and marginalised as it was lamented by one of the respondent;

> "Our grand mothers used to observe the birds *(thungururu)* and butterflies but I forgot how they looked like because I have stayed for long without observing them" (Mary Gaterina, O.I 2017).

Therefore, it is evident that the reduced proper utilization of Agikuyu women's indigenous knowledge systems in food crop production during the State of Emergency may have greatly contributed to food shortages in Kiambu region.

5.3.7 Implications of Colonial Counter Measure on the AWIKS in Food Crop Production

During the Mau Mau war, the colonial government used various measures to combat the Mau Mau rebellion. For instance, Agikuyu people were detained, imprisoned, deported and others repatriated back to the reserves, also the colonial government implemented the last agricultural strategy "The Swynnerton plan" in late 1953 to counter the Agikuyu participation in the Mau Mau rebellion (Swynnerton, 1954). The plan was theoretically aimed at improving Africans agriculture through

Villagization, land consolidation and increased cash crop production programme (Rosberg & Nottigham, 1966).

5.3.7.1 Detention, Imprisonment and Repatriation

Thirty Three 33 (48.5 %) respondents pointed out that when the Mau Mau broke the colonial government swiftly passed legislation that gave the Administration and security forces powers of arrest, detain and to repatriate the Mau Mau fighters and their supporters without warrant or trial (Table 23). This move largely disrupted the AWIKS on food crop production. According to (KNA/MA1/12/47/1953), this move came after the Deportation Ordinance of 1954 ordered the Mau Mau leaders to be deported and detained without trial.

It also ordered the detention of suspects and participants of Mau Mau or anyone found supplying food, drink, clothes or medicine to the Mau Mau and the Agikuyu people in the squatter also repatriated back to their already congested and agriculturally poor reserves. This was meant to restrict the movement of people and isolate the Mau Mau fighters. Rosberg & Nottingham (1966) stated that there were 17,000 Kikuyu convicts and 50,000 detainees with various Mau Mau offenses by 1954 and out of the 50, 000 only 18,000 were actually held in prison for specific offences of activists and captured forest fighter. The rest were not active supporters of Mau Mau who were not charged of any specific offense. These detainees were exposed to cruelliving conditions, poor diet and poor hygienic conditions, hand labour and physical injuries.

Capital punishment was extended to cover a wide range of offences for which almost 1000 Africans were eventually executed (Kershaw, 1977; Berman, 1992). The Agikuyu women who supplied food, money, ammunition, clothing & information were also arrested and put in detention camps where they were forced into communal labour and experienced all sort of sexual harassment (Shannon 1955). Further it was reported that there were about 6,800 Agikuyu women in prisons, detention camps and work camps in October 1955 (KNA/MA1/12/49/1955).

Maloba (1994), Branch (2009), & Castro & Ettenger (2015) observed that most of the Agikuyu men and women particularly from Kiambu were moved to the detentions camps in Manyani, Maralal, Mageta, Kisumu, and Nakuru although the number of men was higher than that of women.

Table 23
Implications of the Colonial Counter measures on AWIKS in Food Crop Production

Implication	Frequency	Percent
Arresting and repatriating Agikuyu women disrupted the AWIKS	33	48.5
Withdrawal of too many people negatively affected the use of AWIKS on food crop production	35	51.5
Movement into emergency villages *(ishagi)* reduced women's food crop production n and AWIKS	45	66.8
Communal labour & Curfews limited time for AWIKS in food crop production	41	60.3
Land consolidation led to neglect of some of AWIKS on food crop production	27	39.7
Emphasis on cash crop production pushed to the periphery the indigenous subsistence agricultural practices	24	35.3
Interviews conducted	68	100

The Agikuyu left their land and were taken to new places outside Kiambu district where movement was restricted. Since there was high numbers of detainees, deportation and imprisonment there was intensified anxiety and alienation in Kiambu. This disrupted the normal subsistence food production of the people of Kiambu, since majority of men were either in prison, detention, in the forest as Mau Mau fighters or were Home Guards, the active agricultural production was being done by women and children in the reserves.

It is possible that this overburdening of the Agikuyu women with agricultural production and the reduction of women food crop producers by arrests, detaining and repatriating them affected negatively their use of indigenous knowledge and skills in food crop production which had a significant contribution to food shortages in the area during this time. According to KNA, OP/EST/1/627/1, 1955 there was severe famine between 1955 and 1956 that was caused by food shortage in Kiambu where forty-five people were reported to have died of starvation-related In November 1955.

However, towards the end of 1950s many Agikuyu men and women from Kiambu were released from detention and prisons and they were required to go through a rehabilitation programme which included being taught modernized methods of soil conservation, use of farm yard mature, and emphasis on cash crop production and fodder crops (KNA/ MA1/12/48/1954-1959).

5.3.7.2 Emergency Villagization *(Ishagi)*

From 1954 until the end of the decade the colonial government embarked on measures to reassert control and break the links between the Mau Mau in the forest and their supporters in the reserves, as well as to punish the disloyal population. In this study, forty-five (66.8%) of the respondents stated that the colonial government forced the Agikuyu people to move to the emergency villages *(Ishagi)* a move that changed their traditional food crop production practices. Further, 35 (51.5%) mentioned that the withdraw of large number of people from the reserves negatively affected the utilization of the AWIKS on food crop production (Table 23). This corroborates with the KNA/CS/1/14/25/1953-1954 report that in the mid 1954 the War Council adopted the villagization policy as a way of defeating Mau Mau fighters.

Colonial enclosed villages were laid out on an area fortified by home guard post. The site of the village was chosen on security consideration that sured that no food or other provisions reached the Mau Mau fighters. Sorrenson (1967) further explained that by October 1955, more than one million people had been concentrated into 854 villages. Many of their homes were burnt down just before the villagization programme, a move that brought many Agikuyu people under firm control by Provincial Administration. People were given very short notice to move to villages that were concentrated in very small area, which made it easier for the authority to punish them (KNA/CS/1/14/25/1953-1954). Presley (1992) noted it is women and children who were mostly suffered during the villagization programme because they were the majority of population in the villages and they were often singled out for collective punishments.

Purity Ithugura O.I (2017) reported that Emergency villages *(Ichagi)* were established in areas of Kiambu such as Kinari, Lari, Ndioni, Nderu, Thigio, Ruthigiti, Kerwa, Kamangu, Karai that were not well endowed fertile land and with enough rainfall for

food crop cultivation (Wairimu Ngugi, O.I 2017). These villages which were in horrible conditions included small huts that were tightly squeezed and were occupied by a range of 15 to 27 people, and the villagers themselves provided materials and labour for building the huts. Thus, due to congestions, the villages became breeding grounds for rats, squalor and disease epidemics (Rosberg & Nottingham, 1966). It was reported that women were forced into communal labour of digging long trenches about five feet wide were dug around the villages and spikes were planted at the bottom, then a barbed wire was placed in and around the trench.

Davison (1989) observed that when women were working on the trench, the soldiers could line up behind them to beat those who were not working as fast as they wanted. In these villages, curfews were imposed and the communal labour started at six o'clock in the morning to five o'clock in the evening, six days in a week and without pay or food in order to curtail the movement of people. From five o'clock the villagers were given only one hour to rush to their *shambas* to cultivate before the curfew start at six o'clock (KNA/MA1/12/47/1953). The communal work involved hunting for Mau Mau fugitives, clearing bushes and digging trenches, and soil conservation through terracing (Castro & Ettenger, 2015). Large groups of women and men were seen leaving very early in the morning and coming back in the evening.

It was reported that Agikuyu could produce very little food crops because they were moved in villages *(ishagi)* in areas that were very unproductive, semi arid areas with very poor soil such Thigio, Ruthigiti, Kerwa, Kamangu, Karai in Kikuyu and others were moved to the Margin of the Aberdare forest in areas such as Lari, Kinari and Kireita that are extremely cold (Prisca Nyokabi O.I, 2017; Phideris Nga'ang'a O.I, 2017). Probably, the movement into these new areas meant that the Agikuyu women were exposed to rapid and drastic ecological changes and that the indigenous knowledge and skills that they used in the reserves were rendered unsuitable in these new ecological zones. This therefore this contributed to a significant reduction in the use of AWIKS on food crop production and that the indigenous crops such as various legumes, cereals, sweet potatoes, arrowroots were underutilized and most of them abandoned.

Additionally, it was noted that in these new ecological areas the Agikuyu women did not have much experience with the weather variation and did not have accumulated indigenous knowledge of the natural conditions, soils, vegetation, food crops suitability and agricultural methods. This led to general break down of proper use of AWIKS and practices on food crop production. Furthermore, given the environment and soil degradation that was being experienced by the Agikuyu people in the Emergency villages, it is possible that the Agikuyu women could not utilize well their indigenous knowledge and skills on food crop production and this may have contributed to shortage of food in the area.

Forty-one (60.3%) of the respondents observed that the communal labour and curfews that were set in the Emergency villages disrupted the traditional knowledge and skills in food crop production (Table 23). The communal labour implied that Agikuyu women were overworked, in the villages and time was very limited such that they could only get one hour per day to work on their *shambas* and this was not enough for any meaningful food crop production. Further, and the small plots they were cultivating in the villages were hardly enough to sustain food supply in the households. In their small plots in the villages, the Agikuyu women worked under extreme fear and insecurity because they were oppressed and being beaten by the Home guards and the Supervisors often refused to allow villagers to stop for meals (Presley, 1992). In the villages they lacked enough space to store their food crops and there was only one communal granary that was tightly guarded by the Home guards (Hezra Njehia O.I, 2017; Wamoro wa Nderi O.I, 2017).

This implied that most of the food crops they produced during this time was just for immediate consumptions since they did not have surplus production. Most of the food crops that were kept in the communal granary were destroyed by the many rodents that were breeding in the villages, probably because the Agikuyu women had continuously neglected the use of their indigenous knowledge in food storage and preservation. Furthermore, it was observed that the plants in the villages were being slashed down and burnt by the Home guards so that the Mau Mau fighters don't hide in those farms which led to distraction of the normal food crop production. Therefore, the indigenous agricultural Knowledge, skills and practices were altered by the

colonial villigization scheme and therefore the whole of the Kikuyu villages experienced food shortages and starvation.

5.3.8 The Swynerton Plan Recommendation

In 1954, R.J.M Swynnerton the Assistant Director of Agriculture was commissioned to draw and oversee the programme (Leys, 1975). The recommendation of the Swynnerton Plan in 1954 by Rogger swynnerton transformed the land tenure system in Kenya. The plan recommended that all high quality African land be surveyed and consolidated into sigle holdings and the owners be issued with registered Title Deeds and also to intensify African cahs crop production (Swynnerton, 1954). The plan had considerable changes on the African agricultural production

5.3.8.1 The Land Consolidation and Adjdication Programme

KNA/MA1/47/1953 states that although land consolidation had started early in 1940s, 1953 was the official implementation of recommendations of East Africa Royal Commission (EARC) of 1953-1955. Land and registration was mentioned by 27 (39.7%) of the respondents as a measure that was taken by the colonial administration to counter the Mau Mua fighters and their supporters (Table 23). According to the findings of this study the efforts by the colonial government to bring together the scattered fragments of land into a single holding and to issue individual title deeds to the single holdings led to neglect of some of the aspects of AWIKS on food crop production.

The colonial government hoped that with land consolidation and registration, it would increase individual enterprise, to improve agricultural production and more importantly to be able to curb discontent of Africans especially the Mau Mau rebels. Consequently, hundreds of thousands of the Agikuyu fragmented land was demarcated and put under one single holding then registered as an individual owned property. The registration recognized only individual right of ownership but not tenancy or any other forms of traditional land tenure. This led to displacement of the former *Ahoi* (tenants) who were previously accommodated with the traditional Agikuyu land tenure system (KNA/CS/1/4/25/1953-1954).

It was established that as a way of punishing the Mau Mau freedom fighters the colonial provincial administrators wanted to finish with the land consolidation and registration plan before the Mau Mau fighters are released from detention camps. Waithaka Njuguna O.I (2018) & John Karani O.I (2018) noted that the Mau Mau fighters' land was confiscated then the loyalist who were strong supporters of the colonial government were identified by the chiefs and the headmen and rewarded by being given larger and better pieces of consolidated land. A report by the secretary of Trust Land Board shows that by the end of 1950s land consolidation and registration in Kiambu, Forthall and in Nyeri was nearly complete and that in the three districts a total of 666,525 acres of land had been consolidated into 145,779 farms and registered under 126,713 titles (KNA/MA1/12/49/1954-1959 & Sorrenson, 1967). In Kiambu alone, by the end of 1957, virtually the whole district had been consolidated and 101,000 acres of new farms demarcated (Sorrenson, 1967).

Respondents observed that the colonial land consolidation affected negatively the AWIKS in food crop production given that people were given very short notice to move into the consolidated land which implied that their indigenous farming practices were disrupted. Also during the land consolidation process a lot of indigenous food crops and the traditional storage facilities especially those that belonged to the Mau Mau fighters were destroyed and those Agikuyu families who managed to move with their granaries *(Ikumbi Ria Ndii)* to the consolidated land**,** the granaries were put under the care of the Home Guards (Waithaka Njuguna O.I, 2018)**.**

Furthermore, most of the beneficiaries of land consolidation and settlement schemes were the loyalist and the Home Guards and most of them were adherers of the western cultural practices and modern agricultural practices (Clayton, 1976). They were no longer identifying themselves with the traditional women food crop production practices**.** They relied on the agricultural extension officers who trained then on the European modern methods of crop production especially the production of cash crops. They saw the European systems of agricultural production as superior and deliberately sought to replace the indigenous food crop production practices.

The privatization of the consolidated land created a landless class of people, increased rural stratification and deeped suspicion between the loyalists and the Mau

Mau fighters (Swynnerton, 1954). Under such circumstances, it is possible that the community could not transmit and share their cultural practices such as traditional communal agricultural practices and use of indigenous knowledge and skills on food crop production comfortably. The indigenous land fragmentation and intergroup cooperation especially over large areas with diverse ecology like Kiambu was a very important aspect of AWIKS on ensuring enough supply of food in the households because people cultivated in vastly different ecological zones which reduced the risks of crop failure and ensured sustainable food supply in times of drought or famine. However, this indigenous knowledge on land fragmentation was ignored and neglected during the land consolidation which made to the shortage of food more severe during this time.

5.3.8.2 Cash Crop Development Programme

Another essential element of Swynnerton land reform was mentioned by the 24 (35.3%) of the respondents was the implementation of plan to encourage Cash crop expansion. They also noted that the development scheme intensified Africans commercial agriculture and ignored the indigenous Agikuyu women's food crop production practices (Table 23).

According to KNA/MA1/12/49/1955, this was a strategy that was meant to encourage Africans to produce cash crop such as coffee, tea and pyrethrum rather than food crop production. With this programme, in 1957 the colonial government removed the previous restrictions preventing Africans from growing cash crops such as coffee. This was accompanied by provision of credit facilities, research, extension services to the farmers and substantial investment in the development of soil quality and water resources.

Elkins (2005) observed Agricultural Officers and Instructors could visit the farmers at intervals to monitor their planting methods and to supervise them. Soil conservation contours were marked out and permanent crops were planted on the sloppy ridge living the least steep land for growing food crop. All farmers who planted cash crops such as Coffee had to join co-operative societies to facilitate marketing of their products (Swynnerton, 1954). Between 1957 and 1962 there was

a tremendous expansion in cash crop growing and a significant growth in marketed value of coffee in (Kiambu table 24)

Table 24
Growth of the Marketed Value of Coffee 1957-1962 in Kiambu

	1957	1958	1959	1960	1961	1962
Total planted per acreage	603	737	1,290	3,197	5,418	7,857
Value of growers in pounds	2,013	12,250	42,262	83,514	16,504	61,457

Source; KNA/BV/15/106, 1920-1964. Agricultural Report Central Province and Kiambu District

The report also states that growth of pyrethrum was also expanded in Kiambu, where in 1958 there was 2,726 licensed acres of pyrethrum in Kiambu Lari and Kikuyu Division (Leys, 1975). However, this was not a sincere move by the colonial government to expand the growth of cash crop, in reality it was not meant to improve African agriculture for its own sake because the government maintained rigorous control of production and marketing of such cash crops (Swynnerton, 1954). In 1961 the Kenyan government made efforts to implement the Royal Commission recommendation that racial and tribal barriers to land ownership should be removed (Branch, 2009). Therefore, the colonial government introduced a Million Acre Settlement Scheme in 1961 to redistribute the white settler land to the Africans in the white highland and to provide them with technical advice on betterment of agriculture. Ironically two-thirds of the former fertile White Highland remained intact as plantations and large mixed farms. The other land transfer to the small holders occurred mainly between the white settlers and wealthy African class (Cowen, 1981).

Although the Swynnerton Cash Crop development programme came too late to maximize the opportunity it presented, it had far reaching effects on the Agikuyu women's indigenous food crop production practices. The plan emphasized the shift of agricultural policy in Kenya from traditional subsistence food crop production to commercial African agricultural production. It was noted that henceforth, the Agikuyu Small farmers continued to be informed by this Commercial crop production policy where they frequently had intensive training on modernized farming methods, use of modern agricultural technology, use of fertilizers, frequent supervision and monitoring by Agricultural Officers and Instructors, within the

government controlling the markets of their commercial crop produce and provision of credit facilities. Hannah Kanyuira O.I (2017) noted that this strategy had far reaching changes in most of the Agikuyu women's indigenous food crop production knowledge systems which were now being perceived as outdated and barbaric especially to the enterprising class of famers. It also affected women status and values negatively because cash crops belonged to men and they are one who dominated the land ownership.

Most of the AWIKS on food crop production were therefore pushed to the periphery to pave way to the commercialized Kikuyu agriculture. It was established that majority of the rural women peasants lacked capital and were still farming in small plots where they continued using their traditional farming techniques. The emphasis on cash crop production probably implied that majority of the Agikuyu poor women and landless could continue seeking wage labour from the wealthy enterprising Agikuyu farmers to sustain their families. In such circumstances, the traditional food crops such as cassava, yams, legumes and cereals were neglected and were given very little attention which meant that the utilization of the AWIKS on food crop production also reduced considerably.

5.3.9 Conclusion

The Decolonization process in Kenya from 1939 to 1963 was characterized by catastrophic events of the outbreak of the Second World War and the Mau Mau War. The two major political events escalated tension, anxiety and anger among Africans especially those who were in areas with high level of European settlements like in the Kenyan highland. The Second World War, the Mau Mau war, the colonial war counter measures and agricultural betterment policies had immense implications on the AWIKS on food crop production. Indigenous food crop production labour was reorganized due to increased forced labour, more land was alienated and the fragmented land was consolidated, food crop production was highly neglected due to people involvement in the war and the implementation of the Swynnerton Plan that introduced massive villigization, land consolidation and registration and cash crop production programme. Furthermore, it was established that there was massive loss of lives and withdrawal of energetic Agikuyu men and women from subsistence agricultural farming, immense destruction of indigenous food crops and time

wastage in war recruitment oath taking ceremonies. All this implied that the AWIKS on food crop production was in one way or another disrupted, it was underutilized, ignored and pushed to the periphery.

CHAPTER SIX

EFFECT OF MARGILISATION OF THE AWIKS ON THE AVAILABILITY OF FOOD IN KIAMBU DURING THE COLONIAL PERIOD

6.1 Introduction

The role of the indigenous knowledge systems on food crop production in ensuring sufficient food supply in the households cannot be ignored as shown in previous chapters. The Agikuyu women commanded detailed indigenous knowledge and skills on subsistence food crop production. They understood their environment very well and came up with unique and local specific knowledge in selection of best seeds for planting, weather observation and prediction, variety of indigenous farming methods that ensured soil protection, reduced weed and reduced crop failure, pests and plant diseases. They also had various knowledge and skills in food crop harvesting, preservation and storage to ensure sustainable food supply up to the next harvest season. However, the undermining and marginalization of the AWIKS on food crop production by the European colonization in Kiambu contributed severe shortage of food. This chapter analyses the effect of changes in use of AWIKS on the availability of food in the study area.

6.2 Effect of Marginalization of Indigenous Knowledge System on the Availability of Food

Food and Agricultural Organization (FAO) [2000] pointed out that if famers could improve their crop productivity, it could go a long way in eradicating hunger in the whole World. One sure effective way of reducing hunger is proper use of Indigenous knowledge farming practices (Warren, 1991). Mwaniki (2006) defined food availability as the supply of food through crop production and the distribution. It is one of the four pillars of food security that is food availability, food access, food utilization and food stability. It is the dimension of food security that addresses the supply side of the food security and expects sufficient quatities and quality food from Domestic agricultural production (FAO, 2000). The indicators of food availability are such as consistent seasonal harvest time, sufficient staple food production, adequate food storage facilities, and enough food consumption. If such indicators are neglected and inadequate, a household becomes vulnerable to hunger (FAO, 2002). However, the use of indigenous knowledge systems remained a viable option for developing economies to reduce drought impacts (AgriSA 2016; Iloka 2016).

Indigenous knowledge is very important aspect of development of the local people and therefore if it is ignored it can cause failure in sustainable development (Brokensha *et al.* 1980). Sufficient food supply in the household depends to a larger extent on people's ability to interact and command the natural resources. Therefore, the over-dependence only on the modern scientific knowledge in agricultural production could increase the chances of crop failure (Shepherd, 1998). The use of indigenous ways of food crops production increased food supply in the household level.The food production strategies used by the indigenous people included observation of weather change, quality seed selection, suitable indigenous farming methods, proper food storage and preservation. The undermining of such indigenous knowledge systems on food crop production is one of the causes of food shortage in the contemporary.

Brown *et al.* (2007) pointed out that if the indigenous farming practices and knowledge can be properly used and valued; there can be sufficient food supply in the households. European colonialist failed to incorporate the use of organic manure, crop rotation, traditional food preservation methods like smoking of meat, ash to preserve the seedlings, with their modern scientific methods a move that contributed to severe food shortages. However the recognition of indigenous knowledge systems should not downplayed the role modern scientific knowledge in food crop production. The two should be integrated to enhance food crop production. Khatri-Chhetri *et al.* (2017) pointed out that both Indigenous knowledge and scientific knowledge needs to be empowered.

Kiambu County has a very inimitable history as far as food production and availability is concerned. A lot of food production and distribution took place in Kiambu during the pre-colonial Kenya (Musalia 2010). Indeed, it was reffered to as the food basket of the country. Kiambu West Sub-Counties (Kikuyu, Limuru and Lari) have diverse fertile land mass ranging from tropical rain forest to semi-arid area and diversity in terms of climate. This offered the potential for different agricultural production but it is evident for that the three Sub-Counties suffered widespread hunger during the colonial period (Lambert, 1956; Throup, 1988; Gachihi, 1986). Clark (1980) reported that majority of the Agikuyu from Kiambu traditionally

survived through subsistence agricultural production but during the colonial period Agikuyu people suffered series of severe food shortages and famine.

It was noted that the imposition of colonial rule in Kenya intensified land alienation, commercial agriculture and forced labour which interfered with the Agikuyu a woman's traditional right to access and land use for food crop production (Kanogo 2005). This led to gradual erosion, neglect and considerable loss of some of the AWIKS on food crop production. This marginalization of AWIKS contributed to severe food shortage in Kikuyu land. Ndege (2009) stated that by suppressing and marginalizing the indigenous subsistence production systems and depletion of drought tolerant crops throughout the colonial period, there was decreased food crop production by Africans.

Furthermore, Herbert (2000) observed that for the European colonialist to achieve their capitalist economic objective, they had to ensure that the African indigenous practices were marginalized and underutilized. Europeans viewed the African indigenous subsistence farming systems as illogical, barbaric, backward, biased and as the main cause of soil erosion and poor food crop production (Fahnbulleh, 2006). This study observed that the European created cash crop economy, introduced new food crops that had monetary utility, alienated the Agikuyu traditional fertile land and displaced. Once the Agikuyu were displaced from their land the Europeans were able to force them to work in their plantations and farms. These colonial activities led to marginalization of AWIKS on food crop production, which caused reduction of food supply in the households (Joseph Nguru O.I, 2018).

6.3 Marginalization of AWIKS and its effect on Availability of Food

The study established that when the Europeans passed the Crown-Lands Ordinance of 1902, an influx of European Settlers were encouraged to settle in Kiambu because it occupied a unique geographical position and due to its diverse land mass that offered high potential for diverse agricultural production. The European demarcated the fertile land and the Agikuyu were pushed to the reserves in the northern side near Aberdare and Lari forest and others were moved to in the South-West land of Ndeiya, Karai and Kikuyu which was semi-arid plan covered by lava and volcanic dust (KNA/MAI/7/12).

Land alienation pushed the Agikuyu people to marginal and unproductive reserves that lacked enough soil fertility & large track of land with diverse ecological system which could have been used for indigenous knowledge such as rotational and fallow farming in order to ensure adequate food supply in all seasons (Table 25).

Table 25
Effect of Marginalization of AWIKS on Availability of Food

Effect on food supply	Frequency	Percentage
Marginal reserve & squatter areas lacked enough soil fertility	52	76.5
Poor food crop harvest	26	38.2
Inadequate storage facilities due to lack of enough space	21	30.9
Soil degradation caused deterioration of food crop production	23	33.8
Insufficient food crop cultivation due to political instability	18	26.5
Commercial food crops not affordable by many Agikuyu women	35	51.5
Low cheap labour wages not enough for purchasing food crops	27	39.7
Interviews conducted	68	100

Fifty two (76.5%) of the respondents observed that land was very scarce and not enough for food crop production in the reserves, squatter land, villages and camps such that it may have contributed to lack of sufficient food crop production in the households (Table 25). This was evident by poor food crop harvests and inadequate food crop storage facilities in various villages, squatters and in reserves. Anderson & Throup (1985) further corroborated with respondents as he pointed out that this extensive land alienation limited the Agikuyu women's access to land and land use resources, which may have resulted to significant loss of some indigenous food crops production knowledge in the reserve plots and squatter land.

Furthermore, Phideris Ng'ang'a, O.I (2017) & Elizabeth Nyagaki, O.I (2018) mentioned that due to lack of enough space for food storages in the reserves, squatter land and in villages, Agikuyu women could not properly store or preserve their food well for long without getting spoiled.

> "They tended to store their food on the floor of the house, in communal granaries, in congested bags, baskets and sacks where food crops were often destroyed, spoiled and damaged by pests and rodent" (Prisca Nyokabi O.I 20118).

McGregor (1927) stated that agricultural production deteriorated due to serious shortage of farming space and soil degradation on the Agikuyu reserves and due to the outbreak of influenza in 1918-1919, rider pest. All this contributed to the reduction of adequate food supply during the colonial period.

The colonial period of political instability (First World War, Nationalist activities, Second World War and during Mau Mau War) was characterized by agricultural deterioration and severe soil degradation in the reserves and villages, turmoil and anxiety, loss of lives and lack of time, food crop cultivation was very little. According to eighteen (26.5%) of the respondents, during this period of political instability there was continous suppression and neglection of AWIKS on food crop production and this contributed to the severity of drought and famine that was experienced in Kiambu during the period of political instability. Wangari Mbuthia O.I, (2018) & Prisca Nyokabi (2018) viewed that the food crop that was being cultivated at this time was very little, hardly enough to sustain food supply in the household, most people in the reserves and in the emergency villages were eating only one meal per day when it was available.

In the reserves there increased crowding population that caused serious land degradation and food shortage. There was also an increased visibility of soil erosion and destruction of food crops in the reserves, villages and in squatter land increased (KNA/ MAI/12/14, 1918-1919; KNA/MAI/12/21, 1929). This led to severe drought and a series of famine that hit Kiambu District in the years 1918-1919, 1929-1931 and another acute food shortage was experienced during the Second World War between 1942 and 1943 (KNA/CS/1/2/11/1939-1941). Furthermore, Wanjiru Njuguna O.I, (2018) & Waithaka Njuguna O.I (2018) also identified Ndeiya, Njumbi, Karai, Karii, Gikambura, Rutaria of Kiambu West as some the areas that experienced another severe food shortages or the cassava famine *(Ngaragu ya Mianga)* between 1942 and 1943 when government administrators were distributing the cassava crop floor to mitigate food shortage in the area (KNA/CS/1/2/11/1939-1941). Another acute famine was experienced during the Mau Mau War. This was a clear indication that if the colonial government had encouraged the production of plenty of traditional drought resistant crops such as cassava as they did to other commercial crops, and encourage

the indigenous communities to continue using the IKS on food crop production, the food shortages and famine in the area would not have been severe.

During the Wars there was a complete disorganization of the Agikuyu traditional food crops production systems. The Agikuyu people were moved to areas with unfavorable weather conditions, unpredictable climate pattern variation, poor drained soil, low rainfall. Twenty six (38.2%) of the respondents mentioned that due to such environmental conditions, there was poor food crop harvest due to soil infertility. The lack of enough soil cover due to harse condition, the soil for cultivation had less nutriational value and had become fragile and therefore the diverse food crop production was not guaranteed (Mwangi, 2014). Failure to access fertile cultivating land led to persistent low food crop productivity in squatter land and in the reserves (Overton, 1988). All this combined with other pressures eventually may have led to the outbreak of Mau Mau Rebellion.

During the study, it was also established that when the European established experimental cash crop firms for coffee and tea in Kiambu area, the colonial government did not encourage the Agikuyu people to grow the cash crops. Instead, they were encouraged to grow food crops for exports in order to earn money to pay taxes and improve their living standards (KNA/MAI/16/1911). The colonial government emphasized on massive plantation agriculture for the new cash crops such as tea, coffee and pyrethrum while food crops were not given a lot of attention and were planted on the land that was unsuitable for commercial cash and food crops (KNA/BV/6/95, 1943). Anderson & Throup (1985) indicated that the imposition of commercialized agricultural cash crop and food crop production focused on capitalist economic gains other than the well-being of the community.

Similarly 35 (51.5.%) of the respondents reported that the European commercial agricultural production reduced the production of traditional drought resistant crops which undermined the use of AWIKS on food crop production (Table 25). Therefore, the lack of proper use of the AWIKS on food crop production contributed to decrease in food crop supply in the households. The European commercial horticultural food crops that were introduced in hilly Limuru and Lari areas of Kiambu slowly became staple food for the community. However, the fast growing commercial food crops &

high yield horticultural crops that were introduced in Kiambu were more vulnerable to increased temperatures, low rainfall and required high farm inputs and farm mechanization and in most cases not affordable by the Agikuyu women (Joseph Mbuthia, O.I 2017). Hence, since the women had already abandoned some of the indigenous knowledge systems in food crop production, and they could hardly afford to purchase the European western farm inputs, they were not able to produce sufficient food for their families.

Francis Ngumo (O.I, 2018) reported that the Europeans did not encourage the use of indigenous farming practices in their large-scale plantations and therefore the AWIKS on food crops were neglected and marginalized and some were totally abandoned. Turner & Katherine (2006) stated that lack of abundance indigenous crops and loss of access to traditional food resources certainly played a role in reduction of food crop production. The export of food crop for cash income in 1920s and 1930s despite the internal food shortages also contributed significantly to reduced availability of food (KNA/DC/MUR/3/2/6/1943-1953). FAO (2016) reported that in the twentieth century food crop diversity was lost due to replacement of local food crop varieties with High Yield Varieties (HYVs) and fast growing commercial food crops. The European high yeild varieties and fast growing crops were not resilient to drought, pest and diseases, a factor that may have put the community at risk of experiencing a series of severe food shortage. The drought tolerant indigenous food crops have been reported to improve soil fertility through nitrogen fixation capacity and they are very rich sources of calories (Gathungu, 2018).

Josphat Waikwa, O.I (2017) & Agnes Watetu, O.I (2017) stated that in the traditional setup the Agikuyu community was always concerned about the type of food that they produced including their quantities and qualities. The traditional communities also consumed different traditional food for nutritional and therapeutic purpose (Turner and Katherine, 2006). Waithaka Njuguna, O.I (2018) revealed that as colonial period progressed, the Agikuyu people had reduced the gathering and consumption of wild foods such as fruits, wild leafy vegetables such as stinging nettle and *terere*, and other edible root and tuber crops. These traditional food crops did not require extensive labor because women gathered most of them were scattered by women in the homestead garden to grow and they adapted well in new ecological zones. This

caused a shift in the staple food consumed by the Agikuyu people such that the majority of Agikuyu people slowly started to consume a combination of indigenous food crops and western European food crops.

Muraya Ngumo, O.I, (2017) stated that the Agikuyu staple food mainly changed from the traditional food *Mataha- irio*, whole grain cereals, roots, tubers, fruits and traditional vegetables, to a variety of horticultural crops such cabbage, kales, carrots, irish potatoes, refined maize flour, tea and bread. The transition in staple food consumption resulted in the increased consumption of refined food, which hastens the increase of non-communicable diseases like obesity and diabetes (Verena & Cheema, 2007). This meant that the Agikuyu Women could rely mostly on cash (money) they got from low wage labor to buy the indigenous food crops they could not grow. In most cases, the indigenous food crops were not available in the nearby market (Helen Mukuhi, O.I, 2017). The wage labour money was however not enough to buy sufficient food in the households. Robertson (1997) noted that by mid-1950s the whole of Kiambu District was producing less of maize requirements to feed its population, and that it needed to buy about 100,000 bags to efficiently supply its population.

Wallbank (1998) pointed out that most of these new European food crops were highly valuable for both commercial and subsistence production and needed specialized agricultural training and extension services which majority of the Agikuyu people could not afford. However, most of the respondents' viewed that the colonial government agricultural officers were ignorant of indigenous food crops and the indigenous farming practices and therefore they did not consider including them in their agricultural training as an important aspect of mitigating hunger. Muchoki (1988) stated that the colonial government did not take keen interest in African agriculture in Kiambu either on quanity or quality a move that had a lot of impact of Agikuyu food crop supply.

Presley (1992) reported that in order to force the Agikuyu people into the forced labour, the colonial government imposed heavy taxes and low wages for the Africans so as to create specific need for cash money. Mcgregor (1927) stated that various native labour laws were introduced following the Northey circular in 1919 required

the district officers and chiefs to procure African labour including women and juvenile children, who were employed to pick tea and coffee in European plantations. Consequently there was mass migration of African labour particularly men who were recruited to work on European settlers plantations.

The demand for women labour rose tremendously during the biggest harvests season started in October and reached its height in December and another mini-picking season was between April and June when only few coffee berries were ripe while tea, pyrethrum and sisal picking went throughout the year (KNA/MAI/12/14 1918-1919). Therefore, the greatest demand for women's cheap labour took place between November and April when a significant number of women were engaged in European low wage labour. World Bank (1993) indicated that the intensive involvement of women in forced low wage labour disrupted the IKS on proper land preparation, time for planting the food crops, weeding and harvesting calendar leading to delayed food crop production activities and reduced food crop yields.

Twenty seven (39.7 %) of the respondents mentioned that Agikuyu women's labour wage was very low and hardly enough to buy sufficient horticultural food crops in the households (Table 25). Furthermore, Nasimiyu (1985) observed that the minimum wage for unskilled or semi-skilled women labour was very low compared to that of their male counterpart. Therefore, lack of enough money to purchase food stuffs due to extremely low labour wages that the women were being paid reduced food supply in the households.

Nasimiyu (1985) pointed out that low wages limited access to sources of income which may have reduced the availability of indigenous food in their household resulting to consumption of insufficient food. Sorrenson (1967), Gachihi (1986) & Ahlberg (1991) reported that between 1939 and 1945 the Agikuyu women were forced to engage in petty businesses in food items mainly horticultural products, poultry and eggs in order to mitigate food shortages in their households. They also participated in petty trades such as prostitution leading to women's negative image, increased public and private sexual violence and numerous unwanted pregnancies (White, 1986). By the 1930s, food shortages and malnutrition had become a common feature in Kikuyu land (Ahlberg, 1991).

6.4 Conclusion

Prior to the European colonialism in Kenya, the Agikuyu women commanded detailed agricultural indigenous knowledge systems on selection of quality seeds for planting, knowledge on observing and predicting weather in order to prepare for planting and to prepare for seasonal transition. They also used indigenous farming methods and implements properly, they had detailed knowledge on soil protection, determine crop suitability, and weed control to enhance soil fertility so as to increase food production and supply of food in the household. They used properly the knowledge on food crop harvesting, storage and preservation to ensure sustainable availability of food crops. However, the depletion, disregard and marginalization of the traditional AWIKS on food crop production by European colonialists led to decrease of food supply in the study area. The AWIKS on food crop production were pushed to the periphery through intensive land alienation, increased commercial and suppression of traditional subsistence labour through colonial forced labor laws. Consequently, the Agikuyu people in Kiambu experienced a series of severe shortage of food and lack of enough food supply in their household most of the time during the colonial period due to neglect, marginalization and underming of AWIKS on food crop production.

CHAPTER SEVEN

SUMMARY, CONCLUSION AND RECOMMENDATION

7.1 Introduction

A study on colonialism and its implications on the AWIKS on food crop production from 1902 to 1963 was conducted in Kiambu West Sub-Counties (Kikuyu, Lari and Limuru). The study was guided by the objectives; to explore the AWIKS on food crop production in pre-colonial Southern Kikuyu of Kiambu upto 1902, to examine the implications of European colonial policies and practices on the existing AWIKS on food crop production from 1902 to 1963 and to analyze the effect of change in use of AWIKS on the availability of food in Kiambu from 1902 to 1963. This chapter therefore presents the summary of the study findings, conclusion, and recommendation and suggestion for further research.

7.2 Summary of the Findings of the Study

In the foregoing chapters, this study has endeavored to give a historical analysis of the implications of colonialism on the Agikuyu women's indigenous knowledge systems in food crop production in selected sub-counties of Kiambu County from 1902 to 1963. The study shows that in pre colonial period, the Agikuyu people in Kiambu West Sub-Counties (Kikuyu, Lari and Limuru) were practicing subsistence farming. Land was therefore the basis of the subsistence agricultural economy.

The study found out that the traditional Agikuyu people had clear division of roles in food crop production. Men were responsible for clearing fields, tending cattle, erecting fences to protect crops and animals, and production of perennial food crops which did not require intensive care and labour. Women were responsible for growing a variety of seasonal food crops, domestic chores and nurturing children, which demanded intensive care, labour and availability throughout the year. Agikuyu women grew seasonal food crops that were mostly drought tolerant food crops. Therefore, they commanded detailed indigenous knowledge on production of such food crops in order to increase food production and to reduce the risk of food crop failure in the community.

The study shows that in pre-colonial period, the Agikuyu women had unique indigenous knowledge systems in observing weather change and climate variation in

order to prepare for the planting of food crops in good time. This knowledge system helped them to know the time for seasonal transition from dry to wet season or the vice versa. This way, they were able to prepare adequately for sowing season, weeding season and harvesting. They were also able to know when to consider planting drought resistant crops due to anticipated shorter rains, or to prepare gabions and terraces that would minimize damages that could occur due heavy rains. All this ensured increased food supply in their homes and therefore the important role of women in food crop production was recognized.

They also had detailed indigenous knowledge system of naturally selecting the best quality seeds for planting, indigenous knowledge in farming practices and techniques. They used fallow farming, mixed cropping, intercropping, crop rotation, shift farming to increase soil fertility and to utilize soil fertility effectively hence maximizing crop yields. They also used the knowledge of crop mulching and use of farmyard manure to improve soil fertility, maintain soil moisture, reducing growth of soil weed as well as natural soil fertilization. The use of traditional farm hand digging stick *(Muro)* gave the women detailed knowledge of soil characteristic and behavior and so they were able to determine the food crop suitability in various types of soils, which in return helped them to increase food crop production.

The Agikuyu women also had intensive knowledge on proper harvesting of food crops, storage and preservation, which prevented the different food crops from being destroyed by pests and rodents or being damaged from rotting. Hence, they were able to sustain food supply in their households up to the next planting season. Furthermore, the Agikuyu women used indigenous knowledge on food crop production for other social and economic aspects such as rain making religious ceremonies and sacrifices, food crop exchange system, initiation ceremonies and marriage ceremonies, which also helped them to ensure enough food supply in their community throughout whole year. Therefore, all this revealed that with proper use of AWIKS on food crop production, there was a very effective way of mitigating hunger in pre-colonial Southern Kikuyu land (Kiambu).

This study demonstrated that between 1902 and 1963 during the establishment of European policies and pracices, the existing traditional practices were undermined

and pushed to the periphery. The Europeans were attracted to the strategic location of Kiambu West area, its fertility for agricultural production and the accommodative nature of the Agikuyu people. Following the singing of the crown land policy in 1902, European, administrators, settlers and missionary alienated massive land and settled in the most fertile parts of Kiambu West. The Agikuyu people were pushed to the marginal and unproductive areas of Kiambu West.

The study shows that some of these marginal areas of Kiambu West where most of the Agikuyu people were pushed to were very cold for example the marginal areas of Aberdare and Kireita forest. Others in the semi arid marginal areas of such as Karai, Kamangu and Ndeiya had low rainfall level that could not sufficiently support growth of indigenpus seasonal food crop. Henceforth, the colonial land alienation, labour policies and intensive cash crop production disrupted, disregarded and marginalized the AWIKS on food crop production. Massive land alienation that occurred in Southern Kikuyu land (Kiambu) during the colonial period also limited the Agikuyu women's access to traditional land and land use which compromised their important role in use of AWIKS on food crop production. Thus the European land alienation in Kiambu changed and weakened the Agikuyu Indigenous institution in order to achieve their capitalist objectives.

In addition, many food crops were destroyed during the process of clearing the land and the Agikuyu women traditional farm tools and implements were thrown away. Consequently, the Agikuyu women's use of indigenous farming methods such as shift cultivation and crop rotation and cultivating of variety traditional drought tolerant food crop was neglected and marginalised. The traditional Agikuyu women's farm implements helped them to determine soil suitability, to conserve soil and to give knowledge on soil characteristic. However, the Europeans viewed them as barbaric, outdated and uneconomical but it was also a way of preventing them from accessing their traditional gardens. The study found out that in the new marginal ecological zones the Agikuyu women lacked some accumulated and passed on knowledge on food crop production which contributed to the lack of proper Transmission of some AWIKS from one generation to another.

The also study revealed that the colonial labour laws also adversely affected the Agikuyu women because they were forced to provide wage labour in European plantations, farms and public works to sustain colonial capital economy. The colonial labour policies altered the existing elaborate traditional division of labour in food crop production. Agikuyu women were a major source of casual labour during the coffee, tea and pyrethrum harvesting season. Women spent a lot of time and energy in cheap forced labor hence AWIKS on food crop production was undermined and neglected.

Additionally, it has been revealed in this study that the colonial labour laws overburdened the Agikuyu women due to mass movement of African labourers' particulary men from reserves to the settlers' farms and in Nairobi townin search for wage labor employment. Agikuyu women in the reserves went through a lot of pressure to meet the demand of European labor demands and to produce food crops for their families. Consequently, women were overloaded and also played a subordinate role in colonial cheap labour and therefore slowly they abandoned and neglected their AWIKS on food crop production. Furthermore, during the established of massive commercialized agriculture the traditional drought tolerant food crops were pushed to the periphery to pave way for fast growing, high yield commercially viable crops. The European colonialists also established large mono cropping plantation, and also introduced new western farming implements and mechanization. The traditional farming methods that were important in ensuring enough food supply were undermined and disregared, and the new European farm implements were very expensive such that majority of the Agikuyu women in Kiambu could not afford to purchase them. Hence, the Agikuyu women were disadvantaged in food crop production.

Furthermore, European missionaries aim to "civilize" Africans and to educate them took uncompromising stand against African indigenous practices and values. They disguised the traditional food and the indigenous practices which they viewed as demonic, primitive, barbaric and outdated. Through Western education missionaries created Agikuyu elites and some beneficiaries who became agents of eroding AWIKS on food crop production. This led to generational and social network breakdown that made some of the youth began to develop a negative attitude towards indigenous knowledge.

The study also observes that during and after the First World War reconstruction strategy of 1920s had far-reaching effects on the AWIKs on food crop production. During the War, some Agikuyu people were detached from practicing indigenous knowledge for a long time, a shift that undermined the role of AWIKS and probably some knowledge was forgotten because of lack of utilization for long. After First World War intensified land alienation and the agricultural education that was being provided to the Agikuyu people was to enable them to produce large quantities of food crop for commercial purpose. However, the role of the AWIKS on food crop production was not incorporated in the agricultural training for production of large quantities food crops.

The study also established that out that the early involvement of the Agikuyu women into the Nationalist movements' activities had significant implications on the AWIKS of crop production. A lot of time and energy was wasted during the demonstrations and confrontations, as well as many Agikuyu men and women lost their lives or became disabled and others were arrested. The nationalist movements also played a significant role in awakening and intensifying the traditional value and subsistence food crop production. However, the high tension and fear during the nationalist movements' protests compromised and reduced effective use of AWIKS on food crop production.

It study also established that the decline in colonial revenue during the World great Economic Depression in 1930s led to an increase in unemployment in the colonies, and the demand for agricultural products declined. The situation wa made worse by the locust invasion, which destroyed everything that was green including the food crops perhaps due to failure to integrate AWIKS on pest control. To mitigate the economic crisis, the colonial government encouraged Famers to mix cash crops and food crops production in the same farms especially planting of wattle trees and food crops in the same farms. This was a significant departure from the traditional indigenous knowledge of intercropping food crops especially grains, legumes and cereals to improve soil fertility. Mixed farming (cash and food crops) decreased soil fertility and it also disrupted indigenous fallow farming methods.

The study also shows that the Second World War destroyed the European Countries including British's economies as well as that of their Colonies significantly. There was labor reorganization that caused serious neglect of food crops production for domestic consumption due to increased commercial food crop production to meet the high food supply demand for military servicemen. The period after the Second World War was marked by recovery from the War strain and Reconstruction of Europe agriculture in Kenya. The resettlement of the ex-servicemen programm in Kiambu by colonialists had far reaching implications on the role of AWIKS on food crop production. Hundreds of acres of land were further alienated by colonial government, which meant that there was more destruction & lose of the Agikuyu women's indigenous food crops and the AWIKS associated with them. The extensive soil conservation and restoration of fertility programme was introduced in the reserves and majority of participants in the communal terracing labour were the Agikuyu women. Such colonial economic policies oppressed the Agikuyu women and marginalized and pushed to the periphery the AWIKS on food crop production.

The study found out that the Mau Mau War also had immense implications on AWIKS on Food Crop Production. There was mass assassination and massacre in most of the Agikuyu reserves and amidst all these massive killings, its women and children who suffered the most. The extreme anxiety, brutality and oppression from the colonial administrators, the Home Guards and Mau Mau fighter, the women's food crop production practices in the reserves were paralysed and weakened. The traditional methods of cultivating such as fallow farming, mulching, intercropping, mixed farming were abandoned during the War. Also the Agikuyu women spent lot of time in oath taking ceremonies and in women's active role as spies, carrier of information and collecting material provisions. This highly undermined value of women and role on food crop production using AWIKS was neglected

The emergency villages *(Ishagi)* were established in areas of Kiambu that were very unproductive, semi arid areas with very poor soil such as Thigio, Ruthigiti, Kerwa, Kamangu, Karai in Kikuyu. In the villages, curfews were imposed from six o'clock in the morning to five o'clock in the evening, six days in a week. The communal labour and curfews in the villages subjugated women to very inhuman treatment and oppression by colonialists and Home Guards which undermined the proper use of

AWIKS on food crop production. The colonial government's Swynnerton plan effort to bring together scattered fragments of land into a single holding and also issue individual Title Deeds ignored the AWIKS on land fragmentation especially over a large area with diverse ecological system which was useful for fallow farming.

The study established that the marginalization of the AWIKS during the colonial period affected the Availability of Food in Kiambu. Food availability is the dimension of supply of food through crop production and distribution. The Agikuyu women traditionally enhanced their food crop production and supply in house hold through the use of detailed IKS. Therefore the undermining and neglect of IKS on food crop production by colonialists decreased food availability in Kiambu through land alienation, commercialised agricultural production and oppressive labour policies.

Lack of enough productive land contributed to lack of enough food supply in the household which was evident by poor food crop harvests and inadequate food crop storage facilities in the villages, squatters and in reserves. Furthermore, due to lack of enough space for food crop storage in reserves and in villages, Agikuyu women tended to store their food crops on the house floor, in communal granaries, congested bags and baskets in their living rooms where food crops were often destroyed, spoiled and damaged by pest and rodents this contributed to decline of food supply in the households. There was also deterioration of agricultural production due to severe soil degradation due to overcrowded population which was visible in the all Agikuyu reserves.

The findings show that the political instability (WW1, Nationalist activities, WW2 and Mau Mau War) was characterized by agricultural deterioration and severe soil degradation in the reserves and villages, turmoil and anxiety, loss of lives and lack of time, food crop cultivation was very little and hardly enough to sustain adequate food supply in the household. There was evidence of series of severe shortage of food supply in areas like Ndieya, Karai, Njumbi and Gikambura, thigio, Kamango during the period of political instability. In the colonial emergency villages and reserves in areas like Ndeiya, Thigio, Njumbi, Karai, Kamangu, Gikambura and Lari people were eating only one meal per day which was a strong indicator of lack of adequate food supply in the households.

Additionary it has been revealed that the fast growing commercial food crops and high yield horticultural crops that were introduced in Kiambu were more vulnerable to increased temperatures, low rainfall and required high farm inputs and farm mechanization and in most cases not affordable by the Agikuyu women. Hence the majority of Agikuyu women continued producing some traditional food crops which were not doing very well in these ecological areas and therefore this led to decline of food crop supply in the families. Also Agikuyu women's labour wage was very low and hardly enough for purchasing sufficient horticultural and exotic food crops in the households.

7.3 Conclusion

This study focused on the historical analysis of the implications of European colonization in Kenya on the AWIKS on food crop production in Limuru, Lari and Kikuyu sub-counties of Kiambu West. The three sub-counties could not sufficiently feed their population in most part of the colonial period and were hit by a series of severe food shortages despite the fact that in pre-colonial set up, most of food crop production took place in Kiambu District, which was referred to as the food basket of the country. This could only imply that there were far-reaching changes in food crop production process that took place during the colonial period in Kenya.

In pre-colonial Kiambu, the Agikuyu women utilized indigenous knowledge system in production of variety of seasonal food crops in order to enhance food supply in the households. Most of the food crops they grew were drought tolerant and very rich in nutrients. They used the indigenous knowledge to grow them in order to reduce risk of food crop failure in the community. Agikuyu women had immense indigenous knowledge in observing weather variations, seasonal transition, and detailed knowledge on selection of the best quality seeds naturally for planting in order to increase chances of having better yields. They used variety of farming methods and techniques which helped them to increase soil fertility, access to varying degrees of soils to ensure no space was wasted, to determine crop sustainability to effective management and control of pests, maintain soil moisture as well as natural soil fertilization. They also had intensive knowledge on proper harvesting and storage techniques. This knowledge system helped to ensure that most of the food crops were able to reach maturity and therefore increasing food supply in the households. The

study concludes that proper use of AWIKS on food crop production was a very effective way of mitigating food shortages in the community.

This study also concludes that the establishment of the European colonial rule in Kenya disrupted, marginalized and disregarded the traditional subsistence agricultural production practices. Consequently, the proper use of the AWIKS in order to improve food crop productivity was highly undermined and neglected and the vital role of women in food crop production was weakened by the colonial capitalist economic policies.

The integration of the Agikuyu women capitalist forced wage labour, colonial intensive land alienation and western education system greatly undermined, neglected and pushed to the periphery the important role of AWIKS on food crop production. This only served to reinforce and to strengthen the existing inequality in the society. The Agikuyu women's role on food crop production using the indigenous knowledge system was marginalized and was not recognized. Therefore, the colonial capitalist divison of labour compromised Agikuyu women's traditional status and value, and their workload was increased tremendously and their control over agricultural produce decreased. This study also concludes that through intensive land alienation and oppressive labour policies, the European colonilasts limited Agikuyu women's traditional right to access to land where they properly used the indigenous knowledge system on food crop production. All these changes contributed to the series of food shortages that were experienced in Kiambu during the colonial period.

The colonial government did not incorporate or encourage the use of women's indigenous knowledge system on food crop production together with modern farming techniques. While indigenous knowledge was undervalued and neglected during the colonial period and should therefore be revitalized and empowered, this should not lead to neglect of scientific knowledge. Therefore, the study concludes the integration of AWIKS and western scientific agricultural knowledge on food crop production could be an effective way of ensuring food security.

7.4 Recommendations

i. The study recommends that the government should accept and recognize that both men and women are important actors in sustaining socio-economic structures of their community and in mitigating society's challenges such as food shortages in their society.

ii. The study also recommends that the relevant AWIKS on food crop production could be integrated into the modern food crop production practices with a bit of modification of suit the current circumstances. This could go a long way towards realization of Sustainable Development Goals (SDGs) 1 on 'eradicating extreme poverty and hunger', Kenya's Vision 2030 and Constitution of Kenya 2010 that guarantee every person right to be free from hunger, and to have adequate food of acceptable quality in the households.

iii. The government through the ministry of Public Service, Youth and Gender affairs should document and keep records of the women's indigenous knowledge system on food crop production to ensure that the information is easily accessible and it can be passed from one generation to another for proper utilization.

7.5 Suggestions for Further Research

A detailed research needs to be conducted to find out the extent to which the AWIKS on food crop production is being utilized in post- colonial period and whether the level of its utilization has some implications on food supply in the households.

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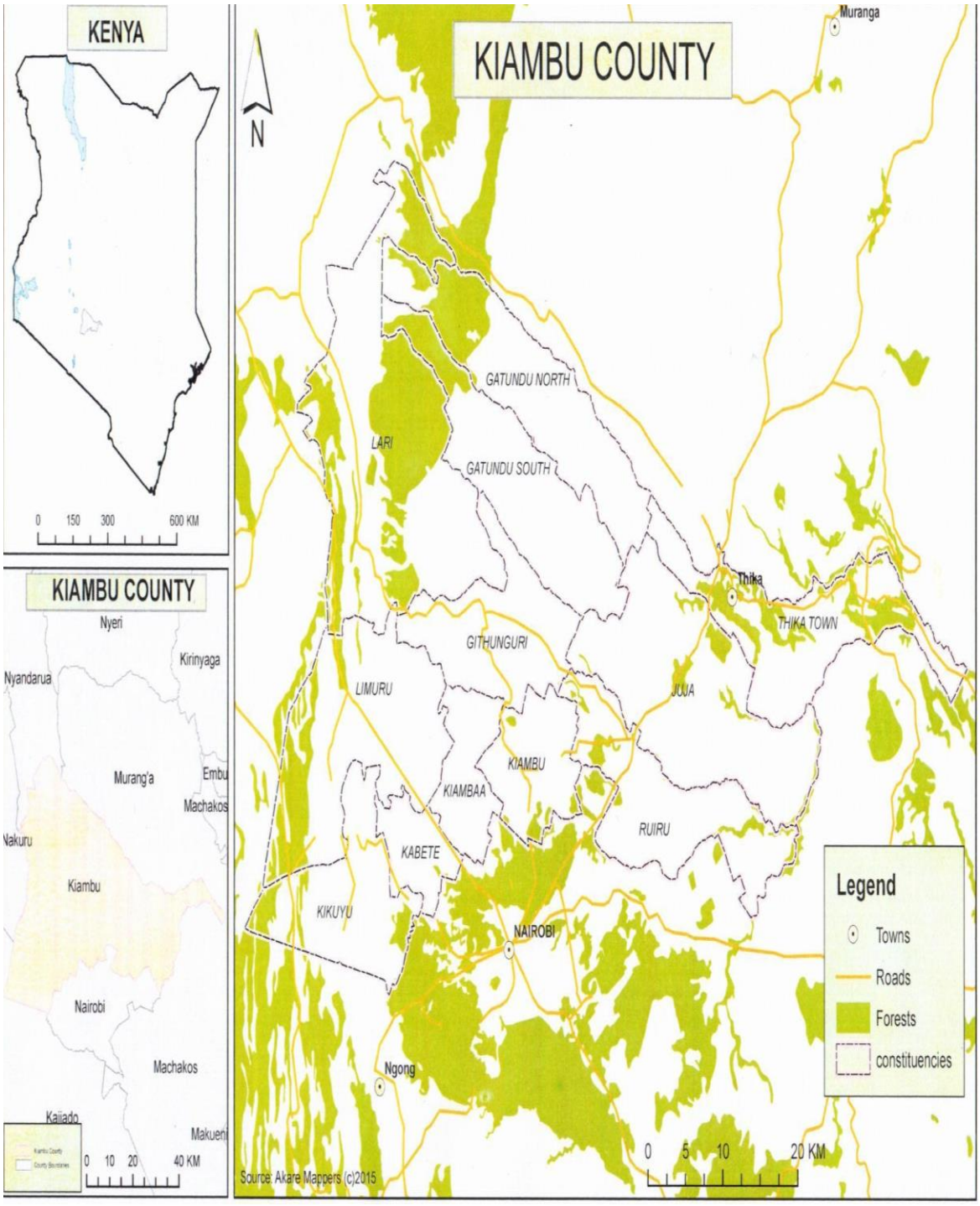
Name	Sub-County	Date	Age	G	Name	Sub-County	Date	age	G
James Mwangi	Lari	23rd June 2017	80	M	Zippora Wariaga	Kikuyu	3rd Nov 2017	66	F
Virginia Wanjugu	Lari	26th Jan 2018	78	F	Francis Ngumo	Lari	26th Jan 2018	69	M
Regina Waithiagen i	Kikuyu	6th Oct 2017	66	F	Pauline Wangari	Githungu ri	24th Aug 2017	99	F
Bornface Njenga	Lari	5th Feb 2018	65	F	Regina Mukami	Kikuyu	20th Jan 2018	83	F
Teresa Waithera	Lari	5th Feb 2018	67	F	Waithaka Njuguna	Kikuyu	21st Jan 2018	87	M
Kanji Kang'ethe	Kikuyu	22nd Sep 2017	70	M	Magdalin e Njenga	Kikuyu	21st Jan 2018	67	F
Hannah Kanyuira	Limuru	22nd Sep 2017	81	M	Martin Kinuthia	Lari	27th Sep 2017	76	M
Julia Njeri	Kikuyu	30th Sep 2017	68	F	Wachuka Gikonyo	Lari	27th Sep 2017	66	F
Muturi Gatheca	Limuru	19th July 2017	78	M	Mary Wanjugu	Limuru	1st Oct 2018	67	F
Bernard Kirori	Limuru	19th July 2017	66	M	Wanjiru Njuguna	Limuru	2nd Oct 2017	70	F
Mumbi Gikonyo	Githun guri	23th Aug 2017	68	F	Recheal Wangu	Kikuyu	5th Oct 2017	71	F
Immaculate Njoki	Kikuyu	28th July 2017	73	F	Cecilia Nduta	Kikuyu	6th Feb 2018	70	F
Joseph Mbuthia	Kikuyu	28th July 2017	77	M	Ndegwa Muhoro	Githungu ri	7th Dec 2017	65	M
Helen Mukuhi	Limuru	16th Aug 2017	68	F	Wambiu Kungu	Kikuyu	8th Dec 2017	67	F
Naomi Wanjiru	Limuru	15th Feb 2018	70	F	Wanjiru wa Duta	Lari/Kab unge	23rd Feb2018	85	M
Elizabeth	Lari	14th	83	F	Jane	Lari	23rd	70	F

Nyagaki		Feb 2018			Wainaina		Feb2018		
Gladys Nyambura	Kikuyu	26th June 2017	70	F	Paul Thiga	Kikuyu	7th Sep 2017	66	M
Wamoro Wa Nderi	Lari	16th June 2017	91	F	Felista Waching a	Kikuyu	7th Sep 2017	67	F
Phideris Ng'ang'a	Limuru	29th July 2017	78	F	Hezra Njehia	Kikuyu	22nd Sep 2017	101	M
Jackson Ngigi	Limuru	29th July 2017	66	M	Wambui Muthaga	Lari	11th Oct 2017	73	F
Josphat Waikwa	Kikuyu	22th June 2017	72	M	Prisca Nyokabi	Lari	22nd Jan 2018	84	F
Karanja Mbatia	Kikuyu	6th Aug 2017	68	M	Alice Nyandia	Kikuyu	27th Jan 2018	68	F
Wangari Mbuthia	Kikuyu	7th Feb 2018	70	F	Joseph Nguru	Limuru	28th Jan 2018	67	M
Paul M. Nduhiu	Limuru	25th Feb 018	69	M	Purity Ithugura	Limuru	30th Jan 2018	75	F
John Karani	Limuru	9th Nov 2017	77	M	Peter Kanja	Limuru	2nd Feb 2018	76	M
Koinange Njehia	Kikuyu	11th Nov2 017	67	M	Grace Wegoki	Lari	11th Feb 2018	68	F
Margaret Wangari	Kikuyu	11th Nov2 017	76	F	Mugo Wa Kihara	Limuru	12th Feb 2018	67	M
Mary Gaterina	Lari	24th Nov2 017	71	F	Mary Ngima	Limuru	18th Sep 2017	65	F
Mary W. Gathiaka	Limuru	3rd Dec 2017	69	F	Luka Mwaura	Lari	25th Aug 2017	66	M
Muthongu Mbiyu	Limuru	4th Dec 2017	72	M	Erastus Muraya	Lari	12th June 017	100	M
Peter Njoroge	Lari	25th June 017	68	M	Agnes Watetu	Lari	22nd June 017	73	F
Margret Wanjiru	Lari	25th July	66	F	Gathoni Karago	Limuru	4thAug 2017	65	F

		2017							
Eunice Gitau	Limuru	24th July 2017	73	F	Jecinta Waithera	Kikuyu	28th June 2017	69	F
Joseph Mwaura	Kikuyu	13th Aug 2017	66	M					

APPENDICES

APPENDIX I: MAP SHOWING THE LOCATION OF THE STUDY (KIAMBU COUNTY)



Source: Akare Mappers, 2015

APPENDIX II: INTERVIEW GUIDE

This interview guide questionnaire was intended to collect data on the implications of colonialism on the Agikuyu women's indigenous knowledge systems on food crop production in Kiambu County. It had five parts. Respondents were requested to give honest informationon each question in all the five sections to the best of your ability.

SECTION A

Demographic Data

1. Name of the respondent_____

2. Gender Male ☐

Female ☐

3. Age

65yrs -70yrs	
71yrs-80yrs	
81yrs-90yrs	
90yr& above	

4. Location

Limuru	
Lari	
Kikuyu	
Others/ specify	

5. Occupation _____

6. Leadership position where applicable

Religious leader	
Political leader	
Women leader	
School administrator	
Others/specify	

SECTION B

Agikuyu Women's Indigenous Knowledge, Skills and practices in Food Crop Production

1. How was the land owned during the traditional set up

Communal land	
Sub-clan holdings	
Others	

2. What was the land mainly used for before 1902?

i. _____

ii. _____

iii. _____

3. Did the Agikuyu men and women have equal right to own and use land before 1902?

Yes	
No	

(a) If No why

_____

(b) How were the rights different? _____

4. What were the main food crops farmed by the Agikuyu in Kiambu before the coming of white European?

i. Cereals_____

ii. Root crops_____

iii. Vegetables and fruits_____

iv. Beverages and stimulus _____ _

v. Tuber crops _____

5. (a) Did men and women grow different crops?

Yes ☐

No ☐

(b) If yes

i. Which were the crops grown by women and why

ii. Which were the crops grown by men and why

6. What were the unique knowledge and skills that women had in observing weather change in readiness for planting food crops?

_____

7. What were the special traditional skills and knowledge that the women used to select seeds for plantin

_____

8. What were the special farming methods did women sue to ensure good yield of food crop?

_____

9. (a) Did the Agikuyu women have special knowledge and skills on how and when to harvesting food crops?

Yes ☐

No ☐

(b) If yes identify them

(i) _____

10. (a) Identify special knowledge or skills that the Agikuyu women used to store and preserve food crops to ensure enough food supply in their familie

(i)_____

(b)Where did Agikuyu women store the food crops they harvested

(i)_____

(ii)_____

How did the Agikuyu women learn these traditional and knowledge system?

11. Were Agikuyu women special skills and knowledge on food crop production useful in other aspects of social and economic organization

Yes ☐

No ☐

If Yes, how were useful

_____

12. (a) Are you aware of other traditional strategies that were used to improve the supply of food in the families?

Yes ☐

No ☐

(b) If yes name them

(i) _____

SECTION C

Establishment of European colonialism and AWIKS in Food Crop production 1902-1918

1. Can you recall when the white European t came to this area?

Yes ☐

No ☐

(b) If yes, when did they arrive in Kiambu area?

_____

_____

2. Do you recall which white European group arrived in Kiambu first

1.	Missionaries
2	White Famers
3.	Administrators
4.	Others-Specify

3. How did the Agikuyu people perceive the coming of the white Europeans in this area?

_____

4. (a) Did the Europeans take your parents or relatives land?

Yes ☐

No ☐

(c) If yes, how was the land taken in this area?

_____

5. Was the traditional land ownership affected by the white settlement in Kiambu?

Yes ☐

No ☐

If yes, explain how it was affected

6. (a) Did the Agikuyu women have the right to access land during the colonial period?

Yes ☐

No ☐

Explain which rights

_____

(b) Did the Agikuyu women have control over the food crop they produced during the colonial period

Yes ☐

No ☐

If no explain why

_____

7. How were the traditional AWKIS on food crop production affected when the white Europeans took their land

_____

8. (a) How did the European get labour force to work for them in their land/factories/ institutions

(i)_____

(b) Who were the majority workers for the Europeans?

Men ☐

Women ☐

(c)Explain why either men or women

_____

9. Was the traditional division of labour on food crop production affected by white Europeans labour demands

Yes ☐

No ☐

If yes explain how

_____

10. How did the colonial demands for labour affect the Agikuyu women's traditional knowledge and skills in food crop production?

(i) Weather observation

_____

(ii) Land preparation _____

11. (a) Are you aware of some of the new methods of farming that were introduced by European colonialists?

Yes ☐

No ☐

If yes, identify the

(i)_____

(b) How did the above mentioned new European farming methods affect traditional women's special farming skills and knowledge

_____

12. Which were the new crops that were introduced by Europeans?

(iii)_____

13. What were the main crops that were being grown in Kiambu during the colonial period?

(i)_____

(ii)_____

14. (a) Did the Agikuyu women continue to grow their traditional types of food crops during the colonial period?

Yes ☐

No ☐

(b) If No explain why_____

(c)How did the introduction of new crops affect the traditional women's unique knowledge and skills on food crop production in Kiambu

_____ (a) Did the food crops that were grown by men and women change during colonial period?

Yes ☐

No ☐

(b) If yes explain how

_____

15. Can you recall some Missionaries activities that were going on in this area?

Activity	Example of such institutions
Education in missionary schools	
Spread of Christianity	
Medical services	
Others/specify	

16. What was the missionaries view on the women's role and values in the society?

_____

17. Did the missionaries' activities affect the existing Agikuyu women's indigenous roles and values of women in food crop production?

_____

18. (a) Did the Agikuyu women continue with the traditional food crop barter trade during the colonial period?

Yes ☐

No ☐

(b) If yes, which were the main types of food crops were they trading with

(i)

(iii)

(c) If No, Explain why

_____

SECTION D

European Colonialism and AWIKS during the Inter-War and Decolonization Period

1. (a) Were the People in your area involved in the First World War 1 or Second World war?

(b) If yes, who were mainly involved in the Wars

Men ☐

Women ☐

(c)How did the involvement of the above affect food crop production in this area

_____

2. In what ways were the AWIKS affected during the First World War and the Second World War in Kenya

_____

3. (a) Were the Agikuyu people in your area involves in Nationalist movements

Yes ☐

No ☐

If Yes, explain how they were involved

_____

4. Were the AWIKS affected by the Nationalist movement

Yes ☐

No ☐

If yes explain how

_____Were you or your relative involved in the Mau Mau war?

Yes ☐

No ☐

5. (a) If yes, who were mainly involved in the Wars

Men ☐

Women ☐

(b) How were they involved

_____

6. How did the Mau Mau war affect the traditional women's agricultural practices on food crop production in Kiambu

_____

7. (a) Were the Agikuyu women using their unique indigenous skills in food crop production during the Mau Mau war?

Yes ☐

No ☐

(b) If no why?

_____

8. Are you aware of some of the challenges the Agikuyu women were facing in using their traditional skills and knowledge on food crop production

Yes ☐

No ☐

If yes, identify them

(i)_____

9. (a) Are you aware of any strategy or measures that the colonial government provided to improve food crop production after the Mau Mau war?

Yes ☐

No ☐

(b) If yes, identify them

_____

(c)How the above mentioned government measures affect the AWIKS on food crop production

_____

SECTION E

Effects of Change in use of AWIKS on the availability of Food in Kiambu County during the Colonial Period

1. (a) Did the use of new farming methods by the colonialists affect food availability in Kiambu?

Yes ☐

No ☐

(b) If yes how did it affect

_____

2. How did the introduction of new crops affect food availability in this area

_____

3. How did the introduction of new European labour demands laws affect supply of food in the families

_____

4. Were the people of Kiambu consuming wild food during the colonial period

Yes ☐

No ☐

If yes name them

5. (a) Was there any change in the time of harvest of food crop due to colonialism

Yes	
No	

(b) If yes explain how it affected the supply of food in this area

_____

6. Where did you store your food crops after harvest during the colonial period

(i)_____

7. How did the change in your storage and preservation of food crops affect the sufficient supply of food in this area

_____

How many meals did you eat per day at home?

None	
Less than two	
More than one	

(b) If less than two meals, what was the main reasons for not having enough food in your family?

8. Name types of staple food crop that you ate home during the colonial period?

(i)_____

Where did you get the type of food crop you ate from?

1.	Own Farm products	
2.	Given by relatives	
3.	Casual labor	
4.	Public help	
5.	Buying	
6.	Exchanging with other commodities	
7.	Hunting and Gathering	

9. How much food crop products did you get from your farm?

Enough /adequate	
Not enough/ not adequate	

10. (a) Were there new ways that the Agikuyu women came up with to ensure sufficient food supply in their household during the colonial period?

Yes
No

(b) If yes, name them

(i)_____

11. (a) Did the European government come up with ways to ensure adequate food supply in kiambu?

Yes
No

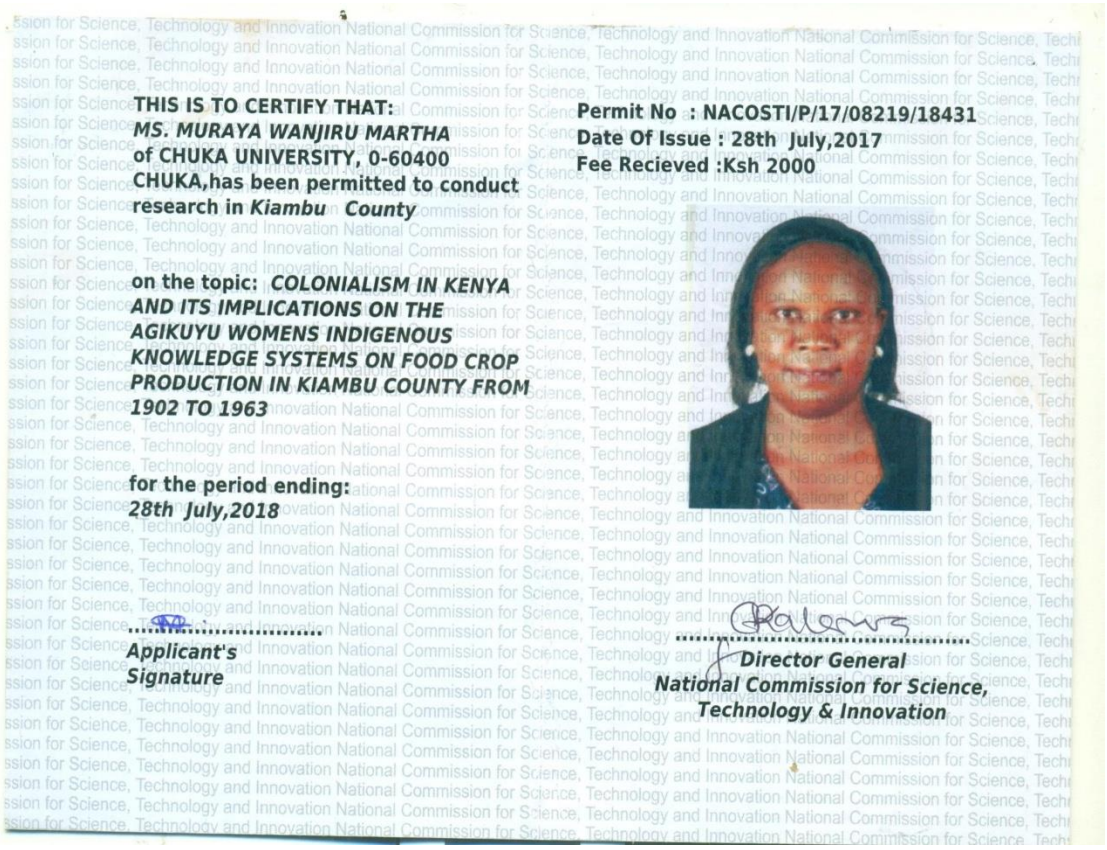
(b) If yes name them

(i)_____

12. What were the main factors that hindered the use and effectiveness of AWIKS on food crop production during the colonial period

a	Poor recognition	
b	Outdated	
c	Lack of resources and time	
d	Lack of documentation	
e	Socio-economic status	

APPENDIX III: RESEARCH AUTHORIZATION PERMIT



THIS IS TO CERTIFY THAT:
MS. MURAYA WANJIRU MARTHA
of CHUKA UNIVERSITY, 0-60400
CHUKA,has been permitted to conduct
research in *Kiambu County*

on the topic: *COLONIALISM IN KENYA AND ITS IMPLICATIONS ON THE AGIKUYU WOMENS INDIGENOUS KNOWLEDGE SYSTEMS ON FOOD CROP PRODUCTION IN KIAMBU COUNTY FROM 1902 TO 1963*

for the period ending:
28th July,2018

.....
Applicant's Signature

Permit No : NACOSTI/P/17/08219/18431
Date Of Issue : 28th July,2017
Fee Recieved :Ksh 2000

.....
Director General
National Commission for Science, Technology & Innovation

APPENDIX IV: PUBLISHED PAPERS

1. Publication Acceptance Letter

CHUKA UNIVERSITY

Knowledge is Wealth (*Sapientia divitia est*) Akili ni Mali

Journal of Environmental Sustainability Advancement Research (JESAR), ISSN 2409-966X, C/O Chuka University, Division of Academic, Research & Student Affairs, P. O. Box 109-60400, Chuka, Kenya, Telephone: +254(0)20-2310512, +254-020-2021721, Email: chukauni.jesar@chuka.ac.ke, Website: www.chuka.ac.ke

REF.: CU/JESAR/VOL.5 28th **March, 2019**

Muraya, M.W.
Department of Humanities,
Chuka university,
P. O. Box 109-60400, Chuka,
Email: murayamartha@yahoo.com

Dear Martha,

RE: MANUSCRIPT ACCEPTANCE

This letter is to notify you that your manuscript titled: "**ROLE OF THE AGIKUYU WOMEN'S INDIGENOUS KNOWLEDGE SYSTEMS (AWIKS) ON FOOD CROP PRODUCTION IN KIAMBU COUNTY PRIOR TO 1902**" was reviewed and recommended for acceptance for publication in JESAR Volume 5.

Thank you for choosing to publish your paper in JESAR. Acceptance of manuscripts for consideration is continuous. Therefore, feel free to submit any other manuscripts that you may have for peer review and consideration for publication in future JESAR volumes.

Yours sincerely,

Prof. D. K. Isutsa, Ph.D.
Editor-in-Chief, JESAR

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Colonialism and the Agikuyu Women Indigenous Knowledge Systems on Food Crop Production in Kiambu Kenya 1902-1918

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Abstract

The introduction colonial capitalist economic policies and practices such as land alienation, forced labour and commercial crop production acted as a major catalyst of change on the existing African indigenous subsistence production especially the Agikuyu Women's Indigenous Knowledge System (AWIKS). This research paper focused on examining the effects of European colonialism on the AWIKS on food crop production from 1902-1918. The study employed descriptive research design and historical trend analysis and it was done

Effects of Mau May War on the Agikuyu Women's Indigenous Knowledge System on Food Crop Production, 1952-1955

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