FARM INPUTS SUBSIDIES INFLUENCE ON MAIZE PRODUCTION IN TRANS NZOIA WEST SUB COUNTY, TRANS NZOIA COUNTY, KENYA

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Bed Arts (Moi University)

A Research Thesis Submitted in Partial Fulfillment of the Requirements for the Award of the Degree of Master of Arts in Geography,Faculty of Arts and Social Sciences,Department of Geography, Kisii University

NOVEMBER,2018

DECLARATION

This research Thesis is my original work and has not been presented for a degree award in any other university or for any other award.

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DEDICATION

I dedicate my work to the Almighty God for the gift of life, wisdom, knowledge and ability.I am indebted to my wonderful and loving wife, Mrs. Wafula Janet, who interceded for me and strengthened my desire to reach my potential work, as a result of the many days i was away in research field studies. I also thank my children for support in many ways, prayers, encouragement and love.

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ABSTRACT

Food sustainabilityall over the world is the biggest challenge affecting humanity; the problem is even more serious among the low-income and food shortagenations. In order to achieve reasonably highfood produce to deal with this situation, sustainable strategies are required. One of such strategies is what this Study wished to address. Hence, the study made an endeavour to find out the farm inputs subsidies influence on maize production in Trans Nzoia West Sub County, Trans-Nzoia County, Kenya. The specific objectives for the studylooked at were: toexamine the influence of the amount of the farm subsidies disbursed on maize production; to assess the type of farm inputs subsidies supplied to farmers; to evaluate the quality and challenges of the farm subsidy given to farmers on maize production in Trans-Nzoia West Sub-County. The study was of significance to stakeholders in the Agriculture sector ranging from The National Ministry of Agriculture and the County; agricultural staff implementing the project and the farmers.The study was based on Social Protection Theory. A descriptive survey design was used since the study was both qualitative and quantitative in nature. A sample of 160was selected from a target population of 1510 for data collection. Questionnaire and an interview schedule were used as tools of primary data collection.Data instruments were pretested in Trans-Nzoia East Sub Countyto test their reliability and viability. Data was collected, coded and analyzed using Statistical Package for Social Sciences (SPSS) version 20.0 computer software. Descriptive statistics were used to give the outputs. From the data analysis based on the objectives, it was found out that all farmers used certified seed in their farms after the introduction of government subsidies. Majority of the farmers were supplied with five varieties of certified seed from Kenya Seed Company limited. It was also found out that there was a significant effect of subsidized seed given that majority of the farmers produced bags using certified seed. It was also found out that National Cereals and Produce Board supplied the inputs. It was also found out that there was maize yield improvement with provision of subsidies. From the study analysis it was concluded that, overly, amount of the farm subsidies type of farm inputs subsidies quality of the farm subsidy given to farmers in the subsidy programme positive significant influence on maize production in Trans-Nzoia West Sub- County. It was recommended that the government should appoint distribution points where input subsidies should be channeled through location Agriculture Officers' rather than the National Cereals and Produce Board. Government should increase capitation for the programme to bring more farmers into the programme to improve production of maize given that there is a significant increase in production under the subsidy programme. Government and Farmers Associations should come up with capacity building programmes to enable framers have capacity on modern Agriculture.

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LIST OF ACRONYMS

ASCU	Agricultural Sector Coordination Unit
CDA	County Director of Agriculture
DFID	Department of International Development
FAO	Food and Agricultural Organization
ICARDA	Agricultural Research in the Dry Areas
IFDC	International Fertilizer Development Centre
IFRI	International Food Policy Research Institute
MOA	Ministry ofAgriculture
NAAIAP	National Accelerated Agriculture Inputs AccessProgramme
NEPAD	New Partnership for AfricanDevelopment
OECD	The Organization for Economic Co-operation and Development
SCAO	Sub County Agricultural Officer
SCCDO	Sub County Crops Development Officer
SCPMEO	Sub County Project Monitoring and Evaluation Officer
UN	UnitedNations
SSA	Sub-SaharanAfrica
TIP	Targeted InputProgramme
SAP	Structural AdjustmentProgramme
Kilimoplus	a 50 kilograms bag of Basal fertilizer, 50 kilograms of top dressing fertilizer and 10 kilograms of seed maize.

CHAPTER ONE

INTRODUCTION

1.0 Introduction

The chapter introduces important part of the background of the study, statement of the problem, purpose of the study, specificobjectives, researchquestions, and assumptions of the study, scope of the study, limitations of the study, significance and definition of operational terms.

1.1 Background of the study

Agricultural practices in most parts of the world are not uniform because of various geographical variables and besides, locations. According to International Food policy Research Institute (IFPRI) 2002, there is a deficiency in food sustainabilityin not just developing nations, but also, in the developed world. The only difference between the two categories of populations is the magnitude of the problem in terms of its severity to the populations affected by the same. The organization argues that in the developed world, the problem of food sustainability can be minimized through the provision of targeted food sustainability measures especially, in form of subsidies to encourage farmers to produce more. These approaches lacks in the developing world leading to hunger and poverty.

Many nations have made efforts to fight poverty through making radical changes in the lifestyles and more importantly in agricultural sectors and recognizing the immense variations needed to revamp farm production. The intensive use of farm subsidies has a long history of use in the world. According to Duvauchelle (2012), majority of farm and agricultural subsidy programmesstarted in the late 1960s and 1970s, even though some countries invested in agricultural subsidies as early as in 20th century. a case in mind are countries like United states of America who started

subsidizing farm input subsidies as early as in 1933 through a program they dabbed as *'the Agricultural Adjustment Act'* and the other its successor, The U.S. Agricultural Act of 1949. Farm subsidies have been made popular, and countries do favor them at times while dropping them at other times. For example, Duvauchelle, (2012) asserts that in New Zealand the government supported heavy farm subsidies until 1984, when they were dropped. Modern intensive agriculture depends heavily on timeliness of the farming operation for enhanced crop yields and profits (Khan, 2011).

According to The Organization for Economic Co-operation and Development (OECD) (2001), most African countries have restarted their desire in using farm subsidies, especially on fertilizer and quality seeds. This looks contrary to the prevailing economic advice that argues against subsidies on private goods as they distort resource allocation. The advice argues that the subsidies are mostly unnecessarily costly and cumbersome to finance without taking an opportunity cost over spending on other public service related investments, while as a way of sharing resources to reach the intended populations is very inefficient and often not equitably shared too.

According to OECD (2001) in high income countries, data shows that subsidies cost less than half of the normal market price of farm inputs. This then means that the value of an input subsidy is higher to many farmers' households, with the majority of themforegoing the opportunity costsuffered due to efficiency losses. The argument ensues that the main reason and concern in developing countries is that farmers have not come out of poverty is that they have not embraced technology hence even if they were supplied with subsidies, they would not be a lot of a difference. The argument further argues that the food growth per capita in Africa is very slow

compared to the food per capita growth in continents like Asia and Latin America. This slow growth has led to ever rising imports of cereals from other countries due to lack of embracing technology and not applying manufactured fertilizer in sufficient amounts, taking advantage of improved varieties. *Most of the farmers in the study area have not embraced this due to high cost of fertilizer and poor quality seeds worsened by inaccessibility to credit from financial institutions. This leaves the only option as cushioning the farmers through subsidizing the costs of inputs. It is hoped that through provision of a high qualityseeds and in the right amounts, coupled with well tested soils, yields will improve consequently translating intohigher incomes, food sufficiency, less hunger,decreased poverty and improved living standards.*

According to Crawford, Jayne & Kelly (2008) the all for subsidies is simply attractive on several grounds. One is that many governments find it difficult to resist the call for subsidies from the farmers due to political reasons, the subsidies seem easy to implement at both levels of governments. To some, moreover, the sight of the governmentinvesting directly to beat the market forces, often regarded with a pinch of saltto start with, is welcome. Moreover, in parts of the emerging worldnovel advice to avoid subsidies is treated with contempt, since they usually come from the developed world where farmers are heavily subsidized and hence the subsidies are seen in the lenses of hypocrisy.

According to Walkenhorst (2007) wasteful aspects and arrangement of the measure of subsidies every now and again is undermined assist by expense of creation by most little scale ranchers in creating nations who develop significantly develop sustenance crops for subsistence, they develop nourishment trims primarily for home use with few the agriculturists developing of trade edits out little amounts mainly to fill house hold household needs.' According to the World Bank report, (2007)

further states that 75 % of rural populations in the third world being generally poor and threatened with food sustainability, calling for a more hands-on approaches with more appropriate and better strategies that can spare and encourage food sufficiency hence, addressing incomes of the lower end populations.*This study was meant to ascertain the farm inputs subsidies influence on maize production in Trans Nzoia West Sub County.*

According to FAO (2015) the demand for food is raisingevery dayand it is expected to grow in an upward trajectory of by 20 per cent from the current by 2030. As this trend remains this way, hunger continues to be detrimental to vast populations to a tune of about 795 million people all over the world between the years 2014-2016 and that many of the people in these bracket of hunger stricken populations are found in developing countries, representing 13 % of those regions' populations. The United Nations in the new accelerated sustainable development goals recognizes the urgency of eliminating hunger in the world by ensuring that nations commit to and develop appropriate policies geared towards sustainable food production. On this breathe therefore, this study aims at acting as a vehicle albeit as one of the many approaches that can be adopted to ensure food sustainability though maize production sub sector in agriculture, by identifying the challenges that if addressed, can go a long way in improving food production as we strive toward achieving vision 2030.

According to New York (2016) The UN Report titled'*World Economic Situation and Prospects* 2016,' notes that,'many nations seek after approaches and techniques for guaranteeing food sustainability, which incorporate subsidies for stable food production.' The report recognizes that some of these strategies may not be financially suitable or ideal as they influence diversification and structural change,

but does not rule out their use for strategic and defined purposes.In this sense, the report calls for “fair and predictable international agricultural markets”, which are necessary for food sustainability, and that may include policy driven subsidy schemes. Similarly, the Food and Agriculture Organization (FAO) of the United Nations asserts that “Markets are central to the successful management of structural transformation, but the process of structural transformation has never been driven entirely by market forces” (FAO, State of Agricultural Commodity Markets 2015-2016).

According to Anderson (2012),'The Nominal Rate of Assistance to Agriculture,' (NRA) is defined as, "the percentage by which government policies and practices (intended or otherwise), have the effect of rising or reducing returns to farmers compared to what they would be without government intervention."They portend that, these interventions are the best practices of the cumulative effect of subsidies and incentives to farmers, minus taxes, levies and tariffs which may be imposed on the sector. Anderson(2012) argues that high-income countries have seen the NRA to agriculture in constant decline since a high of 60% in 1985, when government support to farmers was at its peak, and farmers received 60% more than the open market price for their produce. The rate remains at just above 10%, with a small rise since 2008 in response to difficult economic circumstances. These percentages reflect the extent to which gross returns to farmers were raised, and helped to establish both production facilities as well as markets. These continue to be strong today despite lower levels of support a lesson for the developing world.

By contrast, Anderson, (2012) portends that the NRA to agriculture in developing countries has increased consistently since 1960. At that time it was at a low of minus 25% - indicating a significant additional cost to production by the state. This rate

rose to minus 20% in 1980, and reached parity (0%) in 1985 where subsidies at least balanced levies of various sorts. The rate peaked at 10% in 2000, but poor economic conditions since 2005 saw a decline to minus 5% in 2008, and a recovery to near parity again in 2010. Zambia is high on this scale, at around 10%, with South Africa and Mozambique just below the weighted average. Zimbabwe has a negative support level of below minus 20% (Anderson, 2012).

Morris *et al*., (2007), say that there among the many factors affecting the livelihood of farmers is neglect of usingquality and enhanced farm inputs in producing crops, more so using fertilizer in their farms and crossbreed seeds. Druilhe and Hurle (2012), argue that with low family financial gains and restricted income sources, most farmers, particularly those from the Africancontinent, are not in a position to finance themselves in the acquisition of adequate improved farm inputs to supply enough food and cash- crops to fulfill family food requirement and financial security.Therefore, Kenya is not exceptional, that is why the research was undertaken, particularly in Trans-Nzoia West County in order to encourage the utilization of fertilizer and hybrid seeds, as subsidies make the foremost pervasive policy instrument employed by most governments in developing countries(World Bank, 2007). *This study endeavored to find out on the quality and the amount of subsidy the government gives to farmers and how they impact on production.*

According to Morris et al., (2007); Druilhe and Hurle, (2012), says that before the implementation of structural adjustment and stabilization programs in the early 1990s, that were promoted by the world Bank and the International monetary Fund (IMF), most nations found in Sub-Saharan Africa (SSA) enforced farm input subsidies, that were phased out so as to conform with the agreements with the world Bank and IMF.However, according to DANIDA, (2011) Hurle, (2012); Gilbert et al.,

(2013), in recent years, many countries in SSA have re-introduced these subsidies, including Malawi.

According to Nyoro et al. (2004) maize is the major food diet for the vast majority of the Kenyan population, therefore, "the per capita consumption ranges between 98 to 100 kilograms which translates to at least 2700 thousand metric tons, per year."Nyoro argues that small scale maize production in Kenya, makes up toabout 70% of the whole of the production cost. This then translates to the remaining 30% of the production to large scale commercial producers according to the Export Processing Zone Authority(2005). According to Mbithi (2000), small scale farmers sometimes grow crops for home use, retaining up to fifty 8 % of their total output for sale. However, yields have additionallyremained two tonnestones on average per hectare below the potential six (6) tonnes per hectare a state attributed to adequate absorption of recent production technologies such as yielding high maize varieties and fertilizers as a result of high input prices, lack of access to credit and inadequate extension services to small scale producers (Kang'ethe, 2004).That is why this study investigated the influence of amount, type and quality of farm input subsidies on maize production in Trans-Nzoia west Sub- County.

The origin of farm and agricultural subsidy programs in the World for either; developed, developing or under developed country should be inclusive as suggested by Duvauchelle(2012), the government should formulate policies that discourage subsidies that are funded by tax payers money in the name of boosting farmers' production. In addition to the national government's NAAIAP project the county government has set aside Ksh. 224 million for buying fertilizer and farm machinery. This in reference to, a move to help local farmers practice conservation agriculture to increase crop productivity and attain food sustainability, in Trans Nzoia West Sub

County, the County pumped Kshs. 70 million into buying subsidized fertilizer up from Kshs. 30 million in 2014 (Daily Nation, 2017).

Development in the recent years has witnessed a demand for interest in large scale input subsidies, and particularly in inorganic fertilizer subsidies in agricultural development which could spur food sustainability policies in Africa. To make the subsidies even more attractive was the very high global grain prices in the first part of 2008 but, it triggered the prices rise to the opposite direction.The unfortunate thing is that while global grain and fertilizer prices are on the downward trend, in many domestic markets, and future of grain and fertilizer prices remain very unpredictable. This study did not deal with prices of subsidies but rather the influence the input subsidies have on maize production in Trans-Nzoia West Sub-County.

Kenya set to embark on a National Accelerated Agricultural Input Programme (NAAIAP) (2007) to boost food sustainability, agricultural input use, input market development, and agricultural productivity. at first the government planned to subsidize fertilizers and maize seed for some Sub-Counties, it's was later enlarged to national coverage with plans to supply at least 2.5 million farmers with maize seed and fertilizers for 0.4 ha each, with vouchers issued to targeted farmers (disadvantaged households with land) and subsequent redemption through private input sellers who qualifies for trade credit guarantees.According to studies conducted by Sikobe (2008), Farmers will also benefit from linked extension, cereal banks, warehouse receipts, and participation in farmer groups. This study endeavored to find out whether the provision of subsidies influenced an increase in maize production in Trans-Nzoia West Sub County.

In Kenya, the economy of Trans-Nzoia County largely depends on agriculture and

maize production sustains the population. In Trans-Nzoia West Sub County, the sustained economic growth of the majority of communities relies on small scale agriculture. According to Kwesiga (2004), therefore according Olwande et al., (2009), to sustainable economic growth is growth that is durable, environmentally friendly and widely supported and shared. The livelihood of the people in Trans Nzoia West Sub County depends mostly on small scale agriculture which provides 70% of rural employment (Olwande*et al.,* 2009).

1.2 Statement of theProblem

Sustainable farming approaches have emerged a priority for world leaders towards achieving sustainable development (FAO, 2011). Agricultural sustainability centers on the need to develop agricultural technologies and practices that are accessible to and effective for farmers, and that lead to both improvements in food productivity and positive side effects on environmental goods and services (National Research Council of the National Academies, USA, 2010). Sustainability is emphasized to be a necessary basis for efforts aimed at building lasting prosperity and the adoption of sustainable farming practices is one of the targets of the new global development agenda for the period beyond 2015 which is currently being shaped (FAO, IFAD and WFP, 2013). Food sustainability is maybe the greatest problem confronting humanity in the world today. The problem is even more serious in lower-income, food shortage nations. To accomplish manageable increment in the production of foodin developing countries requires strategies that address four key measurements of economical horticulture and rural advancement specifically individuals, organizations, knowledge and the environment (FAO, 2002).Kenya joined the ranks of Sub-Saharan African (SSA) countries in implementing a targeted input subsidy program for inorganic fertilizer and improved seed. To achieve this, The National

Accelerated Agricultural Inputs Access Program, “Kilimo Plus” initiative, was established in 2007. The implementation of the programme from the year 2007/08, aimed at providing 50 kg each of basal and top dressing fertilizer, and 10kg of improved maize seed to resource poor smallholder farmers. The ultimate goal of these farm subsidies were to increase access to inputs, raise yields and incomes, improving food sustainability, and reducing poverty. However, despite the implementation of the subsidy program in Trans NzoiaWest Sub County,decreases maize production has been witnessed especially among small scale farmers. Kenya Agricultural Research Institute (KARI) (2005) attributes the declining maize production to continuous cropping of maize, removal of field crop residue for feeding livestock, overgrazing, burning of Stover to ease ploughing, resulting to the reduction of both the physical and chemical soil elements. In Trans-NzoiaWest Sub County, the shortage of maize production has been evident a situation that has led to marketers bringing in supplies to sell to local inhabitants at high prices; something that never was the case before. This raises doubts about the effectiveness and efficiency of the subsidy program. The study sought to find out the influence behind the intense subsidy programme meant for Trans Nzoia County.

1.3 Purpose of the Study

The purpose of the study was to examinethe farm inputs subsidies’ influence on Maize Production in Trans Nzoia West Sub County, Trans-Nzoia County, Kenya.

1.4 Specific Objectives

The specific objectives of the study were as follows:

i. To examine the influence of the amount of the farm subsidies disbursed on maize production in Trans-Nzoia West Sub- County.

ii. To assess the type of farm inputs subsidies supplied to maize farmers on maize production in Trans-Nzoia West Sub- County.

iii. To evaluate the quality of farm subsidy supplied to maize farmers on maize production in Trans-Nzoia West Sub- County.

iv. To examine the challenges of farm input subsidies on maize production in Trans-Nzoia West Sub- County.

1.5 Research Questions

The research questions were as below:-

i. What is the influence of the amount of the farm subsidies disbursed on maize production in Trans Nzoia West Sub County?

ii. How do the type of farm inputs subsidies supplied to maize farmers influence maize production in Trans Nzoia West Sub County?

iii. How does the quality of the farm subsidy given to maize farmers influence maize production in Trans Nzoia West Sub County?

iv. What are the challenges of farm input subsidies on maize production in Trans-Nzoia West Sub- County?

1.6 Significance of the Study

The study would be of great importance to all the Ministry of Agriculture for they will use information generated to create clear policies that would revolutionize the agriculture sector through this subsidy programme. The recommendations from the study would be of great help to the agricultural staff implementing the project both at the National level and County level and the farmers in Trans Nzoia West Sub County and be of great help to the scholars who would identify the gaps in the topic from this study and further the body of knowledge in this area of subsidies.

1.7 Scope of the Study

The study was delimited to the farm input subsidies' influence on maize production in Trans Nzoia West Sub County, Trans-Nzoia County, Kenya and was limited to the constructs namely: Trans Nzoia West Sub- County was selected for a study site due to the fact that majority of the population with farms in the county reside in the sub county and the high number of small scale farmers under this farm sub subsidy programme residents of the sub county.

1.8 Limitations of the Study

The limitations of the study were as follows:

i. Since the researcher mostly relied on record keeping, low literacy levels of the respondentswould have affected data collection. This affected the accuracy of the data captured especially for the maize Yields from the beneficiaries of the government farm subsidy. However, care was taken through collecting from literate respondents as data through interviewing the Ministry of Agriculture staff in the various divisions to ascertain the information or, looking for interpreters to get accurate information from the informants.

ii. There was lack of cooperation from some respondents who viewed the study with suspicion and feared that the information given was to be used to their disadvantage. To counter this, the respondents were assured that the findings of the study were for academic purposes only.

1.9 Assumptions of the Study

The assumptions of the study were:

i. That, farmers received an equitable supply of rain throughout the sub county the same so that the water availability will not create variation.

ii. That, the agronomic practices like fertilizer application was done as required that could have not created practices variations among the farmers.

iii. It was assumed that the sampled farms had were practicing their farming in an area nearly with the same soil fertility hence fertilizer application had a similar effect across the board

iv. That the variety of seeds given to farmers was of similar quality to avoid compromising production results.

1.10 Theoretical Framework and Conceptual Framework

1.10.1 The Urban impact theory

The urban impact theory argues that existing economic organization works best at or close to the focal point of a specific lattice of economic improvement, and it additionally works best in those parts of farming which are arranged positively in connection to such an inside; and it works less tastefully in those parts of agribusiness which are arranged at periphery of such a matrix.

A science based agricultural development model can be considered here as another, vital and multi-dimensional model for the present emergency in horticulture area of creating world. Joseph. Gabriel Nagy [1984] proposes this model which centers around three fundamental territories: First the employments of high pay off information sources; the development of effective advances steady with nations' asset blessing; and Institutional Development that encourages the over two. The utilization of high-pay off information sources is characterized assist in three classifications; this idea was drawn by Rutton from Model of Schultz (1964). It implies that advances be produced with a nation's specific asset value proportion as a primary concern. Shabby work of creating nations is with respect to different information sources; the rural training, research and augmentation framework must

deliver innovations to misuse the utilization of this generally less expensive information. Consideration asset value proportion will likewise guarantee that a proper way to mechanical development is pursued that will allow an ideal horticultural yield reaction. Third Institutional development in the science based horticultural model proposed by (Nagy 1984) incorporates the development of those foundations that straightforwardly impact rural yield and efficiency.

These are altogether input establishments alongside farming training; research and expansion segment and item showcase foundations. The greater part of the data sources required by this model originate from non-horticultural model, arrive residency framework, water system, work; high yielding assortments, manure, pesticides, mechanical power and credit, all must be acquired from the nonagricultural area. Institutional developments likewise occur in the creation showcase as the interest for showcasing administrations increments with a country to urban populace move and more item travel through discount and retail channels. In the feeling of sociologies, particularly financial aspects offers rules for the development of the structure of the info and item advertising foundations that are steady with expanded horticultural output and profitability development. The fundamental units of the farming training, research and augmentation segment are the universe framework and agrarian specialized schools, look into stations and research establishments and the expansion divisions. Institutional development here alludes additionally to the association of every one of the units along the lines directed by the administration sciences with the goal that assets and labor are utilized viably and productively. This incorporates appropriate motivator component for researchers, instructors, expansion, experts and director and an arrangement of money related help with the control timing and allotment of assets; hence the

relevance of the theory to the study.

1.10.2Social Protection Theory

The study was based on Social Protection Theory. According to Harvey et al., (2007), "Social protection theory is concerned with protecting and helping those who are poor and vulnerable, such as children, women, older people, people living with disabilities, the displaced, the unemployed, and the sick." Arguments are back and forth on who much such interventions constitute social protection, and indeed in which group do such social protections belong. According to Hanlon et al., (2010), the objectives of social protection range wide apart in terms of poverty reduction and vulnerability, developing of human resource, developing human capital in women and girls, stimulating livelihoods and generally responding to economic and other spheres of life shocks. According to Babajanian et al., (2014) there are other forms of social protection aimed at a more sustainable and longer term development geared toward building capacities in people to permanently graduate out of poverty line. These Long-term goals include but not limited to developing chances and opportunities for a more inclusive growth, human resource development, equity and social stability across the populations.

Harvey further adds that, "Social protection is usually a function provided by the state; as it is theoretically conceived as part of the 'state-citizen' contract, in which states and citizens have rights and responsibilities to each other." In line with the Kenyan constitution, only 23 countries such as Kenya incorporated the Right to Food in their constitutions starting late 2010, while only 13 nations perceive the Right to Food as a mandate standard of state policy. A few states, nonetheless, are exhibiting an heightened responsibility: In August 2010, the New Constitution was affirmed by prevalent referendum in Kenya and Article 43 states that "each individual has the

privilege to be free from hunger and to have sufficient food of satisfactory quality"; The Constitution additionally specifies the "crucial obligation of the state" to secure and advance this and different rights (IFSN, 2011).

It is the responsibility of the state to provide food and nutrition to its citizens. This theory therefore from the onset supports the position that food sufficiency and sustainability is a public good and the state has the responsibility to ensure that its citizens are food secure. There are many fronts that government through policy formulation can ensure this and provision of input subsidies is one of such approaches. The theory was adapted for this study since many farmers in this country are unable to purchase farm inputs due to poverty and therefore unable to produce enough food for their families. This has led to high dependency levels which strain the few family members who are earning.

Similarly as food for social protection programmes can be sourced locally, so can farming inputs. Fault finders of input dispersion programmes contend that they misdiagnose the inaccessibility of inputs as unavailability, noticing that the farmers are normally ready to source seeds even after serious dry spells. While free inputs distribution has of late been famous among benefactors and has successfully supported agricultural production and family food sustainability for the time being, commentators contend that these intercessions undermine local seed markets and are seemingly inappropriate for the local farming frameworks, since tenders are granted to commercial seed and fertilizer organizations which don't satisfactorily consider the neighborhood setting and regularly source their seeds from neighboring nations (Barahona and Cromwell, 2005). As an option to free seed distribution, it is contended that seed voucher and reasonable plans fortify the local economies through the offer of local seeds, are significantly save and give chances to

information sharing among the farmers. National Accelerated Agricultural Inputs Access Program (NAAIAP) in Kenya conveyed vouchers to 35,000 farmers, enabling them to purchase seeds at locally organized seed fairs where the farmers and local dealers were urged to sell their seeds (Wheeler, 2009).

1.10.3 Conceptual Frame Work

A conceptual framework clarifies the relationship that exists between the independent variables and the dependent variables. The independent variables are presumed to be the reason for the changes on the agricultural production. Along these lines, as indicated by framework below the independent variables influences the dependent variables (Kothari, 2004). The framework below outlines how the independent factors influence the agricultural produce.

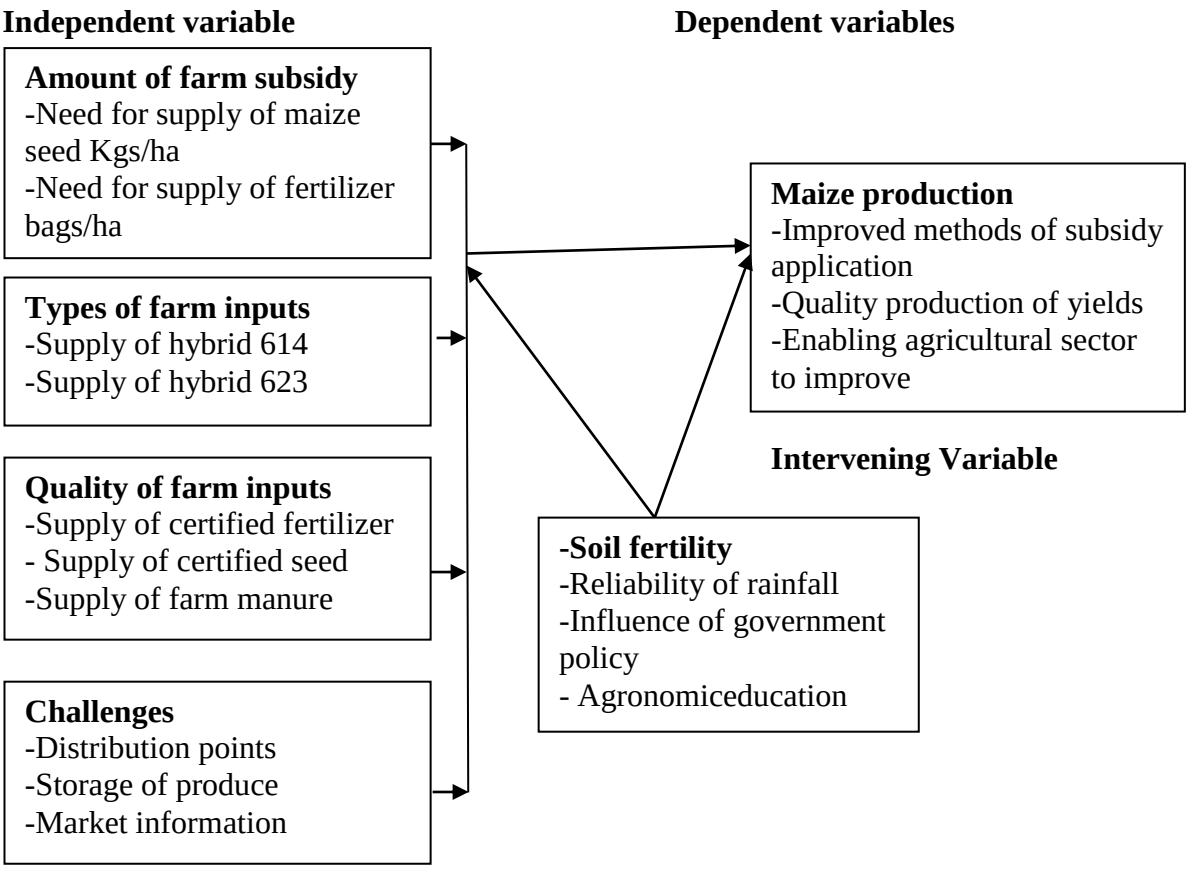

Figure1: Operational conceptual framework of the study

From the figure 1 the conceptual framework shows the interrelationships between and among independent and dependent variables. Amount of farm subsidy, types of farm subsidy and quality of farm inputs, were the independent variables while maize production was the dependent. It was assumed that amount; type of input and quality of inputs would increase production. Production was measured in terms of maize production per acre. The intervening variables in this study were different soil fertility levels, reliability of rainfall, influence of government policy, and agronomic education of the participating farmers. These variables were taken care of by stratifying the sample then selecting respondents from each stratum using simple random sampling technique.

In the conceptual framework, in figure 1, the independent variables included, first, the amount of farm subsidy, therefore, there was need to supply hybrid seed to the

required acres of land by farmers, such that a bag of Kenya seed company or western seed company of 10 kg is planted in one acre and two bags of fertilizers of 50 kg are applied respectively. Usually in Trans Nzoia West Sub County, farmers preferably apply DAP type of fertilizer for high yields. Secondly, the type of farm inputs such as the supply of hybrid numbers 614 and 623 were most preferably used subsequently because of high production per acre. Thirdly, the quality of farm inputs-included the supply of certified fertilizer, certified seed and the supply of farm in the required season.

The independent variable as quoted facilitates the dependent variable, that is, high maize production in Trans Nzoia West Sub County. Independent variables also led to the quality and quantity of maize production from farms and enabling the agricultural sector to improve in Trans-Nzoia County. However, the independent variables without intervening variables, dependent variables would not work effectively in Trans Nzoia West Sub County. Therefore, the soil fertility and reliable rainfall influenced the dependent and played a significant role in maize production. Also the influence of government policy such that the subsidized inputs are supplied to farmers on the right time or season and agronomic education to the farmers made an impact on dependent variables.

1.11 Definition of Operational Terms

This study adopted some significant terms which were significant to suit the study as follows:-

Farm subsidies:refers to inorganic fertilizers and certified seed given free by the Ministry of Agriculture to maize farmers in the sub county

Food sustainability: a situation where farmers have enough food for their consumption with the surplus for sale to cover recurrent expenditure budget

Free inputs: these will refer to the free farm inputs given to the farmers by the Ministry of Agriculture.

Incentives- motivators, subsidies, ready markets and so on, to maize farmers

Sensitization of farmers: is the level of agricultural education a farmer has to enable him practice proper agronomic practices.

CHAPTER TWO

LITERATURE REVIEW

2.0 Introduction

Thechapteraddresses the various specific objectives that are derived from the background of the study and hitherto relate to the topic which is central to the research and captures theoretical guidance and conceptual framework.

2.1.1 Amount of Farm Subsidy Received and Sustainable MaizeProduction

In some countries of the world, politicians use subsidiesas a bait to who voters especially in the rural areas they are poor so, the politicians, as well as potentially also being an instrument of patronage.To some, when the government seems to invest in subsidies, it is a direct way to deliberately overcome the shocks ofmarkets, which is regarded with contempt in the first place, iswelcome. When this happens some places in the developing world their conflicting advice to do away with subsidies is treated with contempt, since it is an original idea from areas and nations which highly subsidize their farmers (Wiggins and Brooks,2010).

In Kenya, like in other parts of the developing countries, the objectives of input subsidy programmes as pointed out by Wiggins and Brooks, (2010) includes: (i) toencourage agricultural production, in this case Trans Nzoia West Sub County. (ii)Mitigate the high cost of logistics from the suppliers to the farmers that end up raising the overall cost of inputs.(iii) To improve soil fertility and avert soil nutrient leaching (in instances of fertilizer) especially in trans-Nzoia west county.(iv)Toreduce the overhead costs of supplying inputs when supply in the market is low hence the economies of scale cannot be achieved. (v) To ensure inputs are affordable to farmers of maize production in Trans Nzoia West Sub County, who cannot afford to buy them, given their poverty levels and their

ineligibility access to credit and inability to uptake insurance against their produce. (vi) should assure farmers to learnand try modern ways of farming and fully take advantage. (vii) Social equality will ensure the benefits transcend to poor farmers. This may end up being harddisfranchise farmers from the political manifestations to win to them to political class that may be (Wiggins and Brooks,2010).Also subsidies have certain disadvantages such as(i) relaying on subsidies so much on inputs that change the costs of input factors, leading to lesser allocations of inputs, with the subsidized inputs being used for others. (ii)Implementation of subsidies may be done in such a way that undermines the improvement of private supply of inputs, by conveying inputs through state offices and by passing nascent local input dealers, that is why the research was undertaken to unearth the challenges farmers face.(iii) Subsidies might be ineffective in raising utilization of inputs and expanding yields. It isn't generally the case that the volume of the inputs applied to sensitive cost. This may be caused by climatic changes which would affect the maize production and affect prices.(iv) When subsidized inputs dominate the supply of a particular input, then subsidies may not be regular, reliable and timely, that is why many farmers in Trans Nzoia West Sub County wait for farm subsidies every year for maize farming (Wiggins and Brooks,2010). Further, according to Banful, (2010) the fertilizer subsidy is subject to inconsistencies,coming from high administrative costs, monopolies and political manipulation. Crawford et al, (2006) argues that the agricultural subsidy inputs were scrubbed and the input markets were opened to the market forces as a part of world banks initiated 'structural adjustment programmes' in the 1980’s. Due to this, the subsidy initiated inputs use which as a consequence engineered agricultural production to decline drastically. Crawford further adds that in the advent of the 20th century, the opposite of

liberalized markets declined andmany nations adopted new subsidy programme especially in several African countries. For instance, The Malawian government was the first to starta come-back to large scale subsidies in 1998. It started by distributing free fertilizer to farmers (Banful, 2010). Countries, such as Nigeria, Zambia, Tanzania, Kenya, Ghana after a while followed suit.

According to Crawford et al, (2006), "theAfrica Fertilizer Summit" under the auspices of "the African Union" (AU), "The New Partnership for African Development (NEPAD) and the Government of Nigeria," in 2006 in Abuja Nigeria, it was Declared that AU member states increase fertilizer use and uptake to a mean of 50 kg/ha by 2015.In this sense, fertilizer subsidies applied by the farmers in Trans Nzoia West Sub County, there would be high maize production yearly.The aim of these declarations if implemented by member states was to ensure that the fertilizer application, being one of the instruments in a five point action plan adopted by the meetings,was to be implemented.The *'smart subsidy programmes*'were meant to be an intervention and mitigating factor to address the shortfalls of the *universal subsidies*, if they adhered to a number of design logistics, targeted specific farmers, provided market tailored solutions and had a clear sustainability strategy (Minde et al, 2008).In this sense, the farmers in Trans-NzoiaWest County should be sensitized on how to apply the farm subsidy when supplied on the right time or season.

While agrarian production and productivity took off in Asia and Latin America amid the most recent four decades, they have to a great extent stagnated in Africa, bringing about a rising reliance on imported grains and an expansion in the quantity of food unsecure groups of people. A few endeavors have been utilized in building up food sustainability, situation key among which was the utilization of farm

subsidies in different courses with varying outcomes.

Comparatively, by the turn of the of 20thcentury, fertilizer use in Africa was only 8 kg/ha, compared with 96 kg/ha in East and Southeast Asia and 101 kg/ha in South Asia. Today, developing nations and especially Africa, accounts for less than 1 percent of global fertilizer consumption (Morris *et al*,2007).In their evaluation report of the Malawi fertilizer programme, the Overseas Development Institute (2007), found out that the years 2005–2006, seasons had good rains, and total maize production was more than double the years 2004–2005 of harvest, producing a surplus of 510,000 tonnes above the national maize requirement. Maize yields averaged 1.59 t/ha, doubling the 0.76 t/ha of the drought-affected years 2004–2005season. Incremental maize production attributed to the fertilizer subsidy was estimated at 300,000 to 400,000tonnes.

It is expected that governments should develop farmer tailored Credit policies that should readily avail credit to farmers so that they can access credit readily hence, able to buy the subsidies.This said loans should be made to farmers especially to input products and technologies that have been proven to have a lasting impact to the farmers.

According to Muendo, (2012) there isdata to show that just low loan interest and loan supervision strategies, but input prices have much more important incentives to the farmers. Muendo further adds that by trying to improve agriculture production only through subsidized creditmay not have a sustainable and positive effect on the farmers.According to Karimi, (2011) rural networks for small scale loans tend to work better where interests are of flexible interest rates for rural savings programs have shown that the rural savings potential is much greater than is generally recognized.

According to Karimi (2011) the high interest rates from financial institutions are an hindrance to the development of viable local financial institutions that could go along way into assisting farmers with subsidized credit policies.This makes farmers have difficulties in accessing loans in support of their farming activities in Trans Nzoia West Sub County and therefore, subsidies in farm inputs are the only alternative which has also challenges.

There are several variables which have been recognized as a new consensus on agricultural credit by project managers and evaluations. They adduce the high transaction costs encountered by both lenders and participating borrowers in agricultural credit projects as an impediment to production. They identify the transaction costs as both financial and social. According toDorward (2009), the borrowing costs, especially for borrowing made by small accountholders, might be a few folds the amount of as ostensible interest payments. These expenses incorporate yet not restricted to: "waiting in line, transportation costs, bribes, lawful and title charges, printed material costs, and time lost from work to manage these demands."The high transaction costs usually emanate from the "supply-side" approach to agricultural credit taken by Aid for International Development (AID) traditional counterparts. There are two teething problems with this approach. First, the interest rate on loans is too often determined by program designers who are more influenced by their home environment than by the recipient's environment (Muendo, 2012).

According to Solem*et.al.* (1985) AID sponsored many agricultural credit programs around the world, During the 1960s and 1970s. The tendency was to set interest rates at 7 to 12 percent, which seemed reasonable in the U.S. context, while host country rates might be running from 50 to 100 percent. Secondly, in disregarding

the economic environment in which the project must operate, AID runs the risk of setting unrealistically high or low interest rates, which may render the lending institution noncompetitive or the program unprofitable. In its design of agricultural credit programs, AID has repeatedly run the risk and paid the price

Many examples have been cited inAfrica. For instance,in Tanzania the impact of evaluation brought out the challenges encountered by farmers caused by inefficiencies in Tan Seed, the Parastatals seed distribution company. An inefficient delivery system became an obstacleto achievement of the project's goal of improved cereal production; however, seed distribution was not one of the responsibilities of that project per se (Soles *at al*, 1985).Also an example of Fertilizer subsidies in Malawi dates back to the mid-1970s, but was suspended in the early 1990s under liberalization. According to Denning et al. (2009) subsidies which targetedvouchers of quality seed and fertilizer enough to plant one tenth of a hectare, were introduced in the year 1998/99. These vouchers were intended to give small scaled farmers an opportunity to learn of the merits of the package being to:spur food production, and thus boosting the farmers; incomes. On the short term, this intervention was able to increase the production of the main food, maize, but by far failed in producing not sufficiency as evidenced by thelow yields in the years 2001, 2002, 2004 and 2005. As a response to these trends, the government was forced to bring back fertilizer universal subsidies in 2005/06 though some donors were opposed to the action (Denning *e.t al*.2009).

According to Mindeet at. (2008) in the year 2006/07, two million seeds and three million fertilizer vouchers were distributed to targeted households. The vouchers allowed recipients to buy two 50 kg bags of fertilizer at what was then 28% of full cost. The report reports that, "in total 175 000 tonnes of fertilizer and 4500 tonnes of

improved maize seed were distributed at a cost of USD 91 million."The report further says that,"By 2008/09 182 300 tonnes of fertilizer for maize were made available with vouchers planned for 1.5 million households."Basing on the outputs as supported by Minde and others it is hard to judge the impact in Malawi. Some argue that the subsidy programme has led to increases production whereas others say the increase can be attributed to increased rainfall, while others argue like rains alone could not have made the remarkable production.

According to Tibbotuwawa, (2010), subsidized fertilizers like triple super-phosphate and muriatic of potash are large because they are sold slightly over USD 3 a bag. But, thesetypes of fertilizers are more costlyin the international markets than urea. He argues that, Sri Lanka has always made fertilizer accessible to farmers at a subsidized price since 1962; ‘with the sole aim being motivating farmers to use of fertilizers thus off-setting the effects of low crop prices and high costs of production. He further argues that the programme has since 2005 ensured the rice farmers have been supplied with subsidized price by government paying the difference of the marked price to the importers. For instance, he says the cost of fertilizer in 2010 per a 50 kg bag of fertilizer was USD 3.07: a 93% subsidy on the cost of urea.The effectiveness of thismassive subsidy remains to be seen in the extent to which the subsidy will encourage additional use of fertilizers by farmers.

According toKikuchi & Masao (1990), estimated that just by removing the fertilizer subsidy could reduce rice yields by only between 1% to 2%, since nitrogen demand is relatively inelastic with respect to prices this conclusion has been supported by Ekanayake (2006), who found a relationship between fertilizer prices and consumption of the three main fertilizers.

According to Wiggins and Brooks, (2010), India initially started to subsidize farmers in the 1960s in support of green revolution, with major spending to keep down the expenses of fertilizer, water for irrigation from the public system, and rustic power that drove huge numbers of the private irrigation system appended to wells. Moreover India nationalized the fundamental banks and guided them to give credit to farmers at concessional interest costs(Wiggins and Brooks, 2010). Studies done by (Dorward*et al.,* 2004; Smith & Urey, 2002) suggest that, in the early stages when subsidies were implemented,they immensely contributed to a rapid expansion of production of cereals that led to poverty reduction. However it remains unclear whether these subsidies have remained to do the same over time of their existence given the down-ward price factor has influenced the farmers negatively to produce.

According to Wiggins and Brooks, (2010) however, subsidies alone were not the key variables of production. They cite other components like adoption of technology, investment in research, infrastructure and human capital part of other factors included in production. They may also add into environmental challenges, to the level that wealthier farmers and nations may hold them to ransom as they have little and direct impact on poverty reduction (Smith & Urey, 2002).

According to Walkenhorst (2007), the total governmental expenditure in the United States of America the federal, regional, and local level spends a large amount of money from Federal Government on agriculture. He portends that half of this amount is intended to benefit farmers through production related subsidies such as fertilizer subsidies.

According to the World Bank Report (2010),a study done estimated the total costs of the Zambian Farm Subsidy programme at Zambian Kwacha 183 billion/USD 47 million. These does not only include direct expenses of the inputs,

theadministration and logistics but additionally, the indirect expenses of compensations paid to government staff in proportion to the money spent on the program and farmer distributions commitments. This shows an overall strong correlation between the amount of money used in purchasing inputs and the maizeproduced.

According to Baltzer et al, (2011) each of a benefittingfamily is entitled to pick up a package of farming inputs, comprising of adequate measures of fertilizer and hybrid seeds to cultivate one hectare of land utilizing the dose suggested by the government. The NAAIAP programme gives 50 kg of basal fertilizer, fifty kilograms of top dressing fertilizer and ten kilograms of hybrid maize commonly known as the ‘Kilimo plus' package. It was established that the targeted farmers sometimes get the basal fertilizer and seed only since the voucher value cannot afford the remaining topdressing fertilizer. In Nandi Sub County there are records showing an increment of up to ten (90 kilogram) bags of maize per acre of maize due to the Kilimo plus farm subsidy (NAAIAP, 2009).

In this study an effort was made to establish how the amount of subsidy given influence the amount of maize produced in Trans Nzoia West Sub- County. Given that different scenarios of subsidies in different countries indicate success and failure in the respective to production. Issues of sustainability of agricultural subsidy have been raised especially by Western countries over the subsidy programme. It remains to be seen if the subsidies in the Kenyan context will remain afloat and this study finds out the challenges attributed to the subsidy programme.

2.1.2 Type of farm Subsidy given and Sustainable Maize Production

Many of AID's input projects to provide biological technologies have been seed projects. One of the five impact evaluations examined the Tanzania seed multiplication effort. Other seed projects reviewed by AID included maize in Kenya, rice and peanuts in the Central African Republic, vegetable seed in a number of Asian countries, wheat in Bolivia, corn and soybeans in Peru, and a broad-based commercial feed operation in Thailand. Biological improvements have been much more striking in wheat, maize, and rice than in sorghum and millet. Droppelmann Klaus, (2009), pointed out that in West Africa, for example, there have been virtually no research improvements in drought-resistant varieties; this shortcoming has added to the complications of food production projects predicated on the existence of improved varieties. In most of these projects, the scientific, on-station seed development and multiplication efforts have been more successful than the off station distribution and utilization of the improved varieties (Droppelmann Klaus, 2009). In fact, projects are fairly rare which demonstrate both a simultaneous success in the development and multiplication of a well- adapted new variety and a successful farm-level use of thatvariety.

The Thailand seed project was notable for its success in (1) providing for a broad range of improved seed needs and (2) doing so through close collaboration with private seed companies (Solem*et al*, 1985). According to Johnston et al, (1975), argue that ‘Agricultural productivity and improvements have long been viewed as the foundation for economic prosperity and social development. In this sense,Evenson et al, (2003) adds that Asia’s Green Revolution which was initiated in the 1960s had a sole aim of developing fertilizerwhich was responsive to rice and wheat production.

Denning *et al*, (2009), portends that ‘Thenational input subsidy programme should center around the utilization of urea (46% nitrogen) in view of its lower unit cost of nitrogen than the compound fertilizer known as 23-21-0 (which contains 23% nitrogen and 21% phosphorus).' He supports his argument to the fact that urea fertilizer, which can provide, more nitrogen to crops, is cheaper compared to phosphorus fertilizers. This is so on the grounds that nitrogenous fertilizers are subsidized more than Potassic and Phosphatic compost; the subsidy tends to profit increasingly the harvests and locales which require higher utilization of nitrogenous fertilizer when contrasted with the yields and areas which require higher use of P and K. On account of fertilizer, the basic issue has been the unevenness in the utilization of NPK achieved by contortions in value proportion for Nitrogenous fertilizer. It has just caused across the board soil degradation and lower productivity which is becoming more intense with time. Therefore, as it is, presently, there is a need to advance balanced utilization of fertilizer which can be accomplished either by redistributing the available amount of fertilizer subsidies over NPK or by expanding subsidies on P and K such that agriculturists are instigated to utilize NPK in the correct extent.

This would not just check unpredictable utilization of one sort of fertilizerat the convenience of the other, yet in addition decrease inter-regional and inter-crop disparities in fertilizer utilization. Farmers barely give careful consideration to rising micronutrient inadequacies which are influencing profitability, quality and productivity of fertilizer utilization. Huge endeavors are required for soil testing system to evaluate particular lacks at the provincial and sub-regional level. There is a need to take measures – including expanding the supply of such supplements and even subsidies – to rectify them (Evenson*et al*, 2003).

When drawing on experiences from Byerlee et al. (2006) and Hazell et al. (2007), it is plainly demonstrated that there is expanded efficiency for various sorts of farming items in nations with various attributes, and afterward the significant difficulties that should be routed to accomplish expanded profitability. Refinements are made first between various kinds of harvests and items (and certainly between various agro-environmental zones related with these). Maize, rice (prominently NERICA) and perhaps wheat (however this is a substantially less essential product in Africa) are grains with potential high reactions to critical interests in inorganic (and natural) fertilizer application (Byerlee et al., 2006; Hazell et al., 2007).

Proper selection of fertilizer types by farmers is outstanding among other possible factors like appropriate timing and method of application of fertilizers which would influence the farmers' capacity to utilize fertilizers successfully and proficiently. This is probably going to be especially the case with poorer farmers who don't access fertilizer for cash crop production and who are additionally less ready to get to improved seeds and extension advice. As Dorward et al.(2008) noted “Several challenges were noted from the Malawi fertilizer programme among which was the need to enhance program information sharing to the planned recipients and overall population; and deficiencies of fertilizers and befuddle of coupons and fertilizer types in a few regions" (Dorward et al,2008). In one such case involving maize in Kenya, the (2017) Droppelmannreport of 2009 indicates uniqueness in achievement since in most important aspects; Kenya's experience with hybrid maize seed is not replicable, at least in Africa. The initial boost given by large-scale commercial farmers, the significant long-term presence of foreign advisers and the aggressive private seed companies all mark Kenya's success as unique.

To achieve high maize productivity, the type of inputs is paramount. According to

Nyoro, (2002), high quality farm inputs are a prerequisite for high maize production. Among agricultural inputs, seed is perceived to have the best capacity of increasing on farm productivity since seed determines the maximum upper limit of crop yields and efficiency of all other farming inputs (MOA 2004).

There has been considerable adoption of hybrid maize seed in the high maize potential. According to Ayieko (2005), and Tegemeo Household Survey 2004, certified maize seed usage in Kenya's high maize potential areas is 61% whereas 39% use retained or indigenous maize seed. There are cases of farmers using part of harvested grain, retained maize seed from previous seasons and open pollinated varieties (OPVs). Farmers who recycle grain are faced by risk of declined yields of between 5 percent for open pollinated varieties (OPV) and 30percent for hybrids (Pixley&Banziger, 2001). According to Langyintuo*et al*.(2008), a study done to compare improved maize seeds sales volume showed a decline between 1997 and 2007 in Eastern and Southern Africa Countries with Angola reducing by 7% Zimbabwe by 2% and Kenya by 1%.

Farmers have also been discouraged from adopting certified maize seed due to past disappointments. Unscrupulous business people have infiltrated the maize seed market with sub-standard maize seed packed in branded bags of known companies duping farmers to buy the products.As a result, germination has been poor leading to poor maize production. Due to this, small scale farmers have continued to lose faith in hybrid maize seed brands and resorted to uncertified seeds. As noted by Nyoro(2002), farmers who adopt this poor quality although certified seeds have had poor germination and low yields of certified maize seeds.

Soils in the once fertile high potential zones have continued to lose fertility as a result of a number of factors including mono cropping, burning of crop residue,

inadequate fertilizer use and erosion. The remedy to this challenge has been to push framers into full adoption of fertilizer use which has seen an increase in usage especially in high potential zone (Sheahan 2011).

To achieve optimal usage the government and other stakeholders have initiated programs aimed at enhancing access and accelerating fertilizer usage. In Kenya, National Accelerated Agricultural Inputs Access Program (NAAIAP) is one such program. The aim of the program besides improving productivity is to increase soil fertility. Organic fertilizer usage has however been low among small scale maize producers. According to Kherallah*et al.* (2002), majority of small scale farmers cannot afford the cost of fertilizer. He also notes that inadequate supply and high transportation cost due to far off distances from farms to supply outlets also affect adoption and usage of organic fertilizer. Larson and Frisvold (1996) also note that low usage of organic fertilizer is partly due to inadequate supply and lack of affordable packaged fertilizer for farmers.

From the literature drawn above, it has been noted that there is a direct relationship between the type of seeds supplied to farmers and the produce. This is the reason governments across the world have heavily invested on research to produce a type of seeds suitable for different topographies and climates. This is part of the motivation that this studyendeavored to find.

2.1.3 Quality of Farm Subsidy and Sustainable MaizeProduction

According to Solem et al. (1985), the growth of agriculture is majorly determined by many variables. Among these variables include, application of improved and modern inputs like fertilizers, quality seeds, plant propagation materials, other recommended agricultural chemicals and the availability of affordable credit to procure these saidfarm inputs. There is need to ensure that these supply side inputs

are not only adequate but also timely provided when farmers need them. Out of these, supply of seed needs urgent attention as quality of seed is the basic determinant of productivity. The service provider should cushion the farmers who don't recognize the distinction in quality among grain and seed, either on account of numbness or because of absence of readily available seed. There is a need too to revamp the nature of seed production and distribution framework by reinforcing public sector seed organizations and by including private trade in seed multiplication and subsidy framework. Quality checks on inputs are becoming more imperative as the deceitful trade fleecing the farmers by offering deceptive seeds, fertilizer and chemicals has been increasing (Government of India, 2007).

According to IRRI (2008), Malawi is one of the countries in Africa, where there is debate about the relative merits of open pollinated varieties (OPVs) and hybrid varieties of maize. IRRI portends those farmers in Malawi over and over use the OPVs, as maize seed. These OPVs, known as landraces, have become well adapted to the particular farm environment that it has led to improvement of OPVs to make them better to withstand drought and become disease resistant.

According to UBoS (2007) the use of improvedagricultural technologies in Uganda remains a nightmare. This happens in the backdrop of most farmers being aware of the potential of these inputs to increase yield. The report argues that the yield alone are not a panacea to guarantee accelerated adoption of the technology especially, by poor farmers at a time the other overhead costs of quality inputs compared to the farmers' basic needs beingcomparatively higher compared to thereturns from use of these inputs of essence than yield (FAO, 2006).

Limited utilization of enhanced inputs including improved seed, fertilizers, herbicides/fungicides and traction power in production - by the farmers, is broadly

viewed as the main challenge to agricultural productivitygrowth in Uganda (Ministry of Finance Planning and Economic Development (MFPED), 2008; MAAIF, 2010). Data from UBoS (2007), demonstrate that only 6, to 3 percent of cultivating parcels planted with crops in Uganda utilized improved seed, fertilizers, and herbicides/fungicides respectively in farm production. Alongside utilization, the quality of inputs available in the market in many occasions is interfered with, which additionally influence profitability.

Other than low utilization and tampered quality, in any case, inefficient utilization of improved inputs, for example, fertilizers by the farmers in Uganda isn't exceptional. Concerning the effect of improved inputs on profitability, most researchare consistent with the positive and huge effect of fertilizer on yield (World Bank, 2007). Be that as it may, the effects of economic returns of fertilizer still remain mixed. For instance, Kelly and Murekezi (2000), found that fertilizer use in many zones of Rwanda was beneficial for a few crops, (for example, maize and potatoes),and not for others – for instance, sorghum and beans. On account of seed, the World Bank (2007) gives broad writing of the positive effect of improved seeds varieties on yield in Asia and even in Sub-Saharan Africa, however little is said on the economic returns from utilizing these seeds particularly for smallholder farmers from Africa.

On his report on evaluation of Agricultural Inputs Support programme (AISP), Chinsinga (2011) argues that,"over the life time of the subsidy programme,focus was shifted more and more towards hybrid seeds."They argue that," hybrid maize seeds generate higher yields than OPVs and are therefore more attractive for policy makers, who want to show fast results, especially, for political capital." However, Non-governmental organizations allude that, OPVs are more suitable for

smallholders, as they are more resistant to pests and diseases, more drought resistant and more familiar to farmers.

In the Trans-Nzoia West Sub County Agricultural Officers Annual Report of 2011, it is shown that various types of basal fertilizer are given to the farmers owing to the price levels during the voucher redemption time. Agro dealers give alternative basal fertilizer other than the recommended Diammonium Phosphate (DAP) which have differing levels of nutrients and hence of different quality. The same case has been applied to seed because there is high demand of seed during the start of the season leading to the favorite varieties of maize like Hybrid 614D missing in the Agro dealers shops (DAO, 2011). The study was therefore to find out the relationship between the qualities of the inputs issued with the maize production.

2.1.4 Challenges of farm inputs on maize production

To address challenges to farming in dry lands of the world the International Center for Agricultural Research in the Dry Areas (ICARDA), which is the worldwide agrarian research focus working with nations on the planet's dry territories, together with its accomplices have for over three decades been building up a scope of enhanced advances for feasible cultivating suited to little scale ranchers in conditions with rare water and profoundly factor atmospheres (ICARDA, 2010). As indicated by ICARDA these practices are custom fitted to nearby conditions to address yearning and neediness with the end goal to enhance provincial jobs and encourage evenhanded, naturally, socially and financially supportable improvement in the dry land districts.

It is consequently that a noteworthy investigation of things to come of nourishment and cultivating up to 2050 has called for generous changes all through the world's sustenance framework to make it more practical so it can all the while raise yields,

increment proficiency in the utilization of data sources and lessen the negative natural impacts of sustenance generation (FAO, 2011). As per FAO the examination suggests the appropriation of reasonable yield generation rehearses which utilize the environment approach where inputs, for example, arrive, water, seed and manure are utilized to supplement the common procedures that help plant development, including fertilization, regular predation for irritation control, and the activity of soil biota. Manageable cultivating rehearses have been found to at the same time raise yields, increment productivity in the utilization of sources of info and decrease the negative ecological impacts of nourishment creation (United Nations Environment Program UNEP (2012).

Around the globe feasible cultivating rehearses have been found to offer little ranchers and their families various advantages by improving their profitability, diminishing creation costs, building versatility to stress and fortifying their ability to oversee chance (Babu and Blom, 2014). Be that as it may, due to unforseen challenges, creation has dependably remained a tested.

Many dry terrains on the planet's low-salary nations arranged fundamentally in Central Asia, West Asia, the Middle East, North Africa, parts of sub-Saharan Africa and in Latin America have created and effectively executed diverse feasible cultivating procedures to suit the areas conditions (ICARDA, 2010). Be that as it may, as indicated by ICARDA, African nations are carrying behind in receiving these cultivating methodologies however it has been set up that such nations could gain much ground toward neediness decrease and sustenance and nourishment security by focusing on approaches and speculation systems towards maintainable harvest generation rehearses as it has been the situation in various nations that have embraced these practices. In Kenya for instance where horticulture is a noteworthy

supporter of the economy and to the employments for a dominant part of the nation's populace selection of manageable cultivating rehearses has been low with the appropriation movement being initiated by non-government establishments (FAO, 2009). The nation's capability to increment agrarian profitability is to a great extent unexploited incompletely because of high horticultural creation costs and unsustainable cultivating rehearses particularly in the dry and semi-bone-dry districts of the nation (Agricultural Sector Coordination Unit (ASCU), 2011).

Although the limited ability to pay cannot be considered, strictly speaking, a market imperfection contributes to the lack of demand for insurance and can be an equity rationale for public intervention. In most developing countries, low incomes inhibit the development of insurance markets, (World Bank 2007). Incomes for the vast majority of the population are absorbed by basic necessities, such as food and housing. Where insurance is available, health insurance and life insurance are usually given higher priority over agricultural insurance. A recent analysis indicates that there is very limited provision of insurance in the world’s poorest countries, although there is some reason to believe that micro-insurance penetration will increase in the future, particularly for life and health insurance (Roth, McCord, and Liber 2007).

According to Bekkerman, Goodwin, and Piggott (2008) governmentsneed to intervene cover farmers from unforeseen risks by providing them with an insurance cover. The government is able to provide the capital necessary to finance such systemic risks like poor climate and storage costs.

Appraisal of Rainfall Variability

Atmospheric circulation is a major determinant of climate variation in SSA (Dore, 2005; Akponikpè, 2008; Zhang et al., 2008). Precipitation seasons are normal among March and July (Long Rains; LR) and October to December (Short Rains; SR) with the rest of the year being exceptionally dry (Dai et al., 2004). Long haul precipitation slant towards aridification has been accounted for in SSA with various precipitation datasets showing that the isohyets have moved 100-150 km southwards since the 1960s (Sivakumar et al., 1993). Dai et al. (2004) and Hulme (2001) affirmed aridification patterns to be genuine and proceeding. Worldly inconstancy of precipitation is additionally high on the yearly, month to month and every day time scales (Akponikpè et al., 2008). Sivakumar et al. (1993) declares that understanding the normal measure of rain per stormy day is basic in evaluating bury/intra regular fluctuation. Assessing mean length between progressive rain occasions additionally helps in understanding regular varieties (Akponikpè et al., 2008). Graef and Haigis, (2001) revealed that yearly precipitation contrasts may happen toward any path spatially and transiently however a distinction of 200 mm to 300 mm can be recorded inside 100 km, or inside 6-day sweep, individually.

Past examinations frequently credit precipitation inconstancy to El Nino/Southern Oscillation Index (ENSO) and related ocean surface temperatures (Goddard et al., 2001; Chambers, 2003; Yasunaka and Hanawa, 2005). As indicated by Philips (2003) and Hansen (2005), connecting ENSO to precipitation varieties has added to the comprehension of association between the climate, land and ocean. Be that as it may, Recha et al. (2011) noticed that most examinations don't give data on the genuinely necessary character of inside season changeability in spite of its suggestion on soil-water dispersion and efficiency. High varieties in yearly and regular precipitation aggregates and stormy days in Ethiopia and Sudano-

Saheliananeas have been noted (Sivakumar, 1991; Seleshi and Zanke, 2004; Tilahun, 2006). Mugalavai et al. (2008) examined beginning and suspension of precipitation in Kenya and connected their variety to air, maritime and nearby geographic conditions yet inside season fleeting precipitation fluctuation was not assessed.

2.2 Rain Distribution and Agriculture

Rain accessibility and spatio-worldly circulation have been ensnared specifically to fighting extraordinary destitution and craving through agrarian improvement (IPCC, 2007). This is especially essential in SSA where agrarian profitability is exceptionally dependent on the impacts of between yearly precipitation circulation and inconstancy (Jury, 2002). Ati et al. (2002) seen that the measure of water accessible to crops relies upon precipitation beginning, length and suspension consequently affecting the achievement or disappointment of a developing season. As indicated by Khuram and Rasul (2011), soil water (whose significant info is precipitation) is the essential necessity for yield development from sowing to development. Generally speaking, edit water prerequisite for the most part relies on climatic factor, for example, temperature, sun powered radiation, relative stickiness, wind speed and harvest phenological stages (Ghazala and Mahmood, 2009) which are exceedingly factor, whimsical and outrageous in semi-parched areas (Akponikpè, 2008).

Khuram and Rasul (2011) revealed a connection among's precipitation and maize grain yield at the vegetative and conceptive stages as 61%, and 60%, individually. These outcomes were in accordance with aggregate precipitation scope of 135-530 mm inside the developing season.

2.2.1 Soil Fertility Management, Soil Water and Crops generation

Incorporated soil richness administration in dry-arrive cultivating involve amplifying

water catch and taking out spillover, limit water/wind disintegration, overseeing restricted accessible natural assets to adjust for poor soil physical properties and vital utilization of mineral manures (TSBF, 2009). These essentials demonstrate a collaboration between soils, atmosphere and human administration with the end goal to upgrade by and large yield profitability; yet all are very factor parameters. Studies demonstrate that in dry season inclined conditions, edit reaction to compost is exceptionally subject to occasional dispersion of precipitation because of its impact on soil water content (Shumba et al., 1992; Nyakatawa et al., 1996; Nyamudeza, 1998; SEDAP, 2001).

Regardless of the job of in-situ water reaping frameworks and preservation systems in enhancing accessible soil water for harvest development, their capability to moderate drought planting and orderly issues, for example, yield decrease seems restricted frequently because of deficient data on how supplement water equalization can be advanced under same methodologies (Akponikpè et al., 2008).

In a trial think about on soil supplement content, soil dampness and yield of Katumani maize, Muniafu and Kinyamario (2007) seen that with lower precipitation sums got in a season, absence of huge relationship between's maize yield and percent earth content ($r = 0.21$) suggested a bigger impact of precipitation on yield in sandy soils (quicker dampness misfortune) than in mud soils. They additionally seen that maize yields were high in plots regarded with maize stover as soil buildup and in plots with clayey soil (credited to high soil-water holding limit) when contrasted with yields in charge plots with no buildup cover. Their decision was that fundamental components affecting yield are precipitation sums got in a developing season (marker of accessible soil water substance) and soil earth content (surface) and treatment (ISFM) practice. As per Muniafu and Kinyamario (2007), low

precipitation sums, yields were high in plots with buildup treatment despite dirt substance.

2.3 Summary of Literature Review

The Literature reviewed showed that there is influence on how farm inputs are distributed and afforded by farmers with differing proportions in the developed countries but with almost same magnitude in developing countries in both Asia and Africa. The utilization of seeds and fertilizers, post-harvest losses and institutional factors are issues in the developed countries like America but are a real factor in Asia, Africa particularly Kenya due to poor infrastructure development. Type and quality of farm subsidy supplied have been shown to have a direct correlation to food sustainability from the literature reviewed and generally agreed in the world all over. Banful, (2010) the fertilizer subsidy is subject to inconsistencies, coming from high administrative costs, monopolies and political manipulation. Crawford et al, (2006) argues that the agricultural subsidy inputs were scrubbed and the input markets were opened to the market forces as a part of world banks initiated 'structural adjustment programmes' in the 1980's. Due to this, the subsidy initiated inputs use which as a consequence engineered agricultural production to decline drastically. Crawford further adds that in the advent of the 20th century, the opposite of liberalized markets declined and many nations adopted new subsidy programme especially in several African countries.

The *'smart subsidy programmes*' were meant to be an intervention and mitigating factor to address the shortfalls of the *universal subsidies,* if they adhered to a number of design logistics, targeted specific farmers, provided market tailored solutions and had a clear sustainability strategy (Minde et al, 2008). According to Muendo, (2012) there is data to show that just low loan interest and loan supervision

strategies, but input prices have much more important incentives to the farmers. According to Karimi (2011) the high interest rates from financial institutions are an hindrance to the development of viable local financial institutions that could go a long way into assisting farmers with subsidized credit policies. They adduce the high transaction costs encountered by both lenders and participating borrowers in agricultural credit projects as an impediment to production. They identify the transaction costs as both financial and social. According to Dorward (2009), the borrowing costs, especially for borrowing made by small account holders, might be a few folds the amount of as ostensible interest payments. These expenses incorporate yet not restricted to: "waiting in line, transportation costs, bribes, lawful and title charges, printed material costs, and time lost from work to manage these demands.

For instance, in Tanzania the impact of evaluation brought out the challenges encountered by farmers caused by inefficiencies in Tan Seed, the Parastatal seed distribution company. According to Mindeet.at. (2008) in the year 2006/07, two million seeds and three million fertilizer vouchers were distributed to targeted households. The vouchers allowed recipients to buy two 50 kg bags of fertilizer at what was then 28% of full cost. The report reports that, "in total 175 000 tonnes of fertilizer and 4500 tonnes of improved maize seed were distributed at a cost of USD 91 million. According to Kikuchi & Masao (1990), estimated that just by removing the fertilizer subsidy could reduce rice yields by only between 1% to 2%, since nitrogen demand is relatively inelastic with respect to prices this conclusion has been supported by Ekanayake (2006), who found a relationship between fertilizer prices and consumption of the three main fertilizers. According to Walkenhorst (2007), the total governmental expenditure in the United States of America the federal, regional, and local level is spends a large of money from Federal Government on agriculture.

He portends that half of this amount is intended to benefit farmers through production related subsidies such as fertilizer subsidies.

African Republic, vegetable seed in a number of Asian countries, wheat in Bolivia, corn and soybeans in Peru, and a broad-based commercial feed operation in Thailand. Biological improvements have been much more striking in wheat, maize, and rice than in sorghum and millet. Droppelmann Klaus (2009), pointed out that in West Africa, for example, there have been virtually no research improvements in drought-resistant varieties; this shortcoming has added to the complications of food production projects predicated on the existence of improved varieties. He supports his argument to the fact that urea fertilizer, which can provide, more nitrogen to crops, is cheaper compared to phosphorus fertilizers. This is so on the grounds that nitrogenous fertilizers are subsidized more than Potassic and Phosphatic compost; the subsidy tends to profit increasingly the harvests and locales which require higher utilization of nitrogenous fertilizer when contrasted with the yields and areas which require higher use of P and K. On account of fertilizer, the basic issue has been the unevenness in the utilization of NPK achieved by contortions in value proportion for Nitrogenous fertilizer. Farmers barely give careful consideration to rising micronutrient inadequacies which are influencing profitability, quality and productivity of fertilizer utilization. Huge endeavors are required for soil testing system to evaluate particular lacks at the provincial and sub-regional level.

Proper selection of fertilizer types by farmers is outstanding among other possible factors like appropriate timing and method of application of fertilizers which would influence the farmers' capacity to utilize fertilizers successfully and proficiently. This is probably going to be especially the case with poorer farmers who don't access fertilizer for cash crop production and who are additionally less ready to get to

improved seeds and extension advice. According to Ayieko (2005), and Tegemeo Household Survey 2004, certified maize seed usage in Kenya's high maize potential areas is 61% whereas 39% use retained or indigenous maize seed. There are cases of farmers using part of harvested grain, retained maize seed from previous seasons and open pollinated varieties (OPVs). Organic fertilizer usage has however been low among small scale maize producers. According to Kherallah*et al.* (2002), majority of small scale farmers cannot afford the cost of fertilizer. He also notes that inadequate supply and high transportation cost due to far off distances from farms to supply outlets also affect adoption and usage of organic fertilizer.

According to Solem et al. (1985), the growth of agriculture is majorly determined by many variables. Among these variables include, application of improved and modern inputs like fertilizers, quality seeds, plant propagation materials, other recommended agricultural chemicals and the availability of affordable credit to procure these said farm inputs. There is need to ensure that these supply side inputs are not only adequate but also timely provided when farmers need them. Out of these, supply of seed needs urgent attention as quality of seed is the basic determinant of productivity. According to IRRI (2008), Malawi is one of the countries in Africa, where there is debate about the relative merits of open pollinated varieties (OPVs) and hybrid varieties of maize. IRRI portends those farmers in Malawi over and over use the OPVs, as maize seed.

Planning and Economic Development (MFPED), 2008; MAAIF, 2010). Data from UBoS (2007), demonstrate that only 6, to 3 percent of cultivating parcels planted with crops in Uganda utilized improved seed, fertilizers, and herbicides/fungicides respectively in farm production. Alongside utilization, the quality of inputs available in the market in many occasions is interfered with, which additionally influence

profitability. Concerning the effect of improved inputs on profitability, most research are consistent with the positive and huge effect of fertilizer on yield (World Bank, 2007). Be that as it may, the effects of economic returns of fertilizer still remain mixed. For instance, Kelly and Murekezi (2000), found that fertilizer use in many zones of Rwanda was beneficial for a few crops, (for example, maize and potatoes), and not for others for instance, sorghum and beans. On his report on evaluation of Agricultural Inputs Support programme (AISP), Chinsinga (2011) argues that, "over the life time of the subsidy programme, focus was shifted more and more towards hybrid seeds." They argue that," hybrid maize seeds generate higher yields than OPVs and are therefore more attractive for policy makers, who want to show fast results, especially, for political capital." ThisLiterature shows that not much has been done on how farm subsidy influences sustainable food production nationally but none was found for Trans-Nzoia West Sub- County. This therefore necessitated this study on the farm inputs subsidies influence on maize production in Trans-Nzoia West Sub- County.

CHAPTER THREE

RESEARCH METHODOLOGY

3.0 Introduction

This chapter introduces the description of the study area, research design, target population, sample size, sampling procedure, tools for data collection, data collection procedures, data analysis techniques, ethical considerations and data presentation.

3.2 The Study Area

Trans Nzoia County is in the Rift Valley regionof Kenya, located between the Nzoia River and Mount Elgon 380 km Northwest of Nairobi(Trans-Nzoia County,2017). And itscenter town isKitale which is the administrative, agricultural and commercial town. Trans Nzoia County lies on latitude 1.0219° N of the equator and, 35.0015° E of the Greenwich. TransNzoia has a cool, temperate climate with average annual temperatures ranging between a minimum of 10°C to a maximum of 27°C. The County receives annual rainfall ranging between 1000 and 1200mm per annum, with the wettest months being April and October. It has deep fertile volcanic soils and the river valleys and swampy areas have alluvial and sandy deposits (Trans-Nzoia County,2017).

The County borders Bungoma County toward the West, UasinGishu and Kakamega Counties toward the South, ElgeyoMarakwet County toward the East, West Pokot County toward the North and the Republic of Uganda toward the Northwest. Trans-Nzoia West County covers a territory of 2495.5 Square Kilometers. Generally, the region has been possessed by the Kalenjin and Bukusu population. After autonomy a large number of the farms cleared by white pioneers were purchased by people from other ethnic groups in Kenya, and turned into a cosmopolitan zone. Kitaletown is presently more cosmopolitan with possesses from different clans in Kenya involving

nearly 15% of her populace. The Trans-Nzoia West County is to a great extent rural with both large scale and small scale wheat, maize and dairy farming. The area is alluded to as 'the grain bin of Kenya' for its part in food production in the nation (Trans-Nzoia County, 2017).The greater part of its occupants are hardworking farmers with changing varying financial potential. The County has three Sub Counties, to be specific, Trans Nzoia West, Trans Nzoia East and Kwanza. Every one of the sub regions is headed by a Sub County Agricultural Officer and in total headed by a County Director of agriculture based at the County headquarter, Kitale. This research study was done in Trans-Nzoia West Sub County to establish whether farmers in the region benefited from the input subsidy program to expand their farming practices.

3.3 Research Design

Research design is the structure of research which is the "glue" that holds all of the elements in a research together. In this sensethe study employed a correlation research design. The whole purpose of using correlations in research was to figure out how the variables were connected. The design was suitable for this study on the grounds that the study sought to get data that enabled the researcher to explain the occurrences of events under study and in this design the researcher investigated the relationship among the variables without direct intervention from the variations of independent and dependent variables (Kerlinger, 1983). This implies that the researcher observed the dependent variable and retrospectively studies the independent variable for their possible effects on the dependent variables.

3.4 Target Population

According to Mugenda and Mugenda (2003), targeted population refers to a group of people or events under study that the researcher may wish to draw conclusions on.

According to the Agricultural Sub- County Office, there are 1,500 farmers in all the wards of Trans Nzoia West Sub County who were given the farm subsidies from the ministry of Agriculture in 2016. The study therefore targeted farmers and Ministry of Agriculture officials (MoA) as key informants to this study totaling to 1510 respondents as shown in the table 1.

Table 1 Target population of the study

Target population	Total
Farmers	1500
Sub County MoA officials	10
Total	1510

3.4 SampleSize and Sampling Procedures

3.4.1 Sampling Procedures

The study adopted stratified random sampling and purposive sampling techniques to select an appropriate sample for the study. A list of the total beneficiaries was obtained from the Ministry of Agriculture offices Kitale. The sub county was first stratified into four official wards then randomly selected sample was equally distributed to the four wards. According to Gay, Mills and Airasian (2009) formula while sampling a large study population (above 500), a sample of between 10% of the total population is sufficient while, a small population (below 500)20-30% of the total population is sufficient. Since the study population was large (more than 500), 10%, of the population was used on farmers. Hence, 150 farmers made as the sample for data collection. In the sample, the researcher selected every 3rd farmer in each category picked from the list to get the required sample of 150 who were distributed per gender as shown in figure 2:

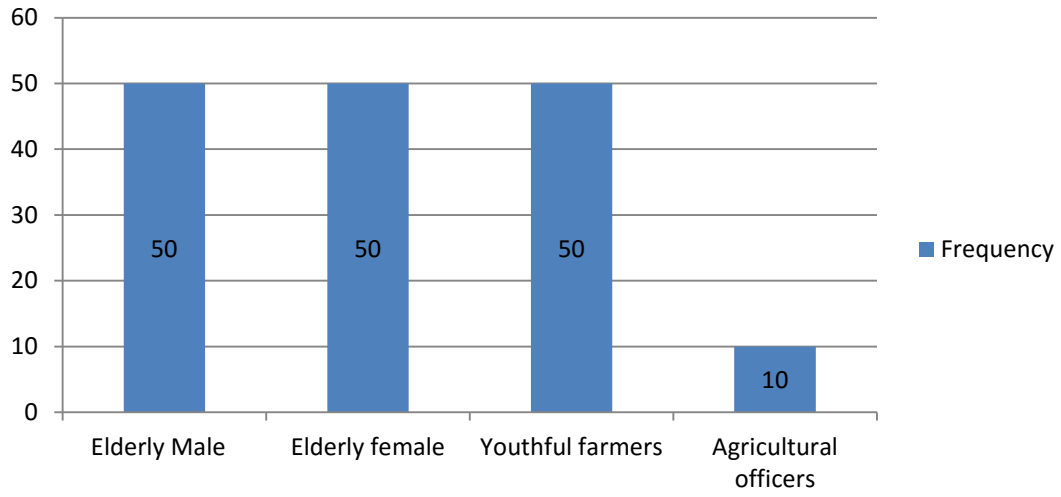

Figure 2: Distribution of sample by gender

The sample population was equally distributed among youth, elderly male and female farmers. The 10 officers from the Sub- County MoA office were selected using purposive sampling procedure.

3.4.2 Sample Size

According to Welmen (2001), it is impractical to sample a whole study population especially if the population is very large since it will be unattainable economically and in time. Therefore, the researcher used various appropriate sampling techniques to select respondents from each population category to enable each of them an opportunity to participate in the study. Hence,the sample of the study was selected as follows: the farmers were randomly selected whereas the MoA officials were purposively selected for the study as shown in the sampling frame in table 2.

Table 2 Sampling frame for the study

Target	Sampling technique	Sample population	Percentage	Sample size
Farmers	Stratified random	1500	10%	150
MoA officials	Purposive	10	100%	10
Total		**1510**		**160**

3.5Data Collection Instruments

According to Creswell (2011), survey methods collects quantitative data using tools of data collection like questionnaires and then analyze the data to describe trends about responses to questions from the respondents. It usually uses questionnaires and interviews to find out opinions, attitudes, preferences and perceptions of groups of people on an area of interest. Kathuri and Pals, (1993) adds that questionnaires are used to collect basic descriptive information from a broad sample.Data collection instruments that were used in the study included; the questionnaire, interview schedules and document analysis as the researcher targeted both primary and secondary data.

3.5.1 Questionnaires

Questionnaire was most suited instrument for the study since the researcher was in a position of reaching many respondents in a short time. Since the researcher utilized drop and collect later system respondents had sufficient time to react to the questions without surge, questionnaires gave a feeling of confidentiality since respondents were not required to give their names on the instrument. Farmers' questionnaires were divided into seven sections. Section A, gave personal and general information about the farmer. The other sections contained statements that access the type of inputs, time issued, challenges faced from getting the inputs, to administrative issues

and maize production per acre for the years after using the subsidy, as indicated in the questionnaires in appendix B.

3.5.2 Interview Guide

To collect data for this study, the principle technique that was used was interviewing. According to (Mugenda&Mugenda, 2009), interviews as a form of data collection technique is one of the vital sources of data collection in qualitative research. He argues that the interviewschedules bear an edge given that they provide a detailed data which otherwise is not practically possible to obtain, if questionnaires were used. The technique entails an oral exchange between an interviewer (researcher or research assistant) and interviewee (respondent) who may be an individual or a group of individuals (Kathuri and Pals, 1993). The interview guide comprised of a rundown of questions that were utilized by interviewer to gather information from the respondent during the interview session. An interview guide made it possible to get information required to meet specific objectives of the study which couldn't be captured through utilization of different instruments i.e. questionnaires (Mugenda and Mugenda, 1999). Also an interview guide was used to get data from the officers from the Ministry of Agriculture as illustrated in the sample in appendix C.

3.5.3 Document analysis

Yin (2009), asserts that documentary information is usually relevant in each case study. One such advantage of document analysis is that it acts as a source of data in qualitative research and enhances the credibility of the study as important aspect of trustworthiness (Jwan and Ong'ondo, 2011). The use of document analysis as a data generation technique was therefore important in the study. The document which were obtained from the MoA in research sites were used in the study for giving conclusive relevance to the field study in Trans Nzoia West Sub County.

3.6 Piloting of the Instruments

The instruments were piloted in Trans-Nzoia East Sub-county where fifteen farmers were selected using stratified random sampling for the questionnaire administration. This was done to ascertain that the instruments actually measures what they purport to measure (Mugenda and Mugenda, 1999). Necessary adjustments were done on the questionnaire on areas showing weakness or difficult for the respondents to correctly respond. A rerun was done for instruments upon which they were certified for use in data collection in Trans-Nzoia West Sub-county.

3.7 Validity and Reliability of Instruments

To guarantee that the tools for data collection were precise in the collection of pertinent information, they were subjected to a reliability and validity test as explained below:

3.7.1 Validity of the Instruments

The term validity as applied in this research alludes to the appropriateness; meaning and usefulness of any inferences a researcher draws in light of data obtained using an instrument (Kothari, 2006). To attain reasonable content validity, the researcher sought for opinions from colleagues, experts and the Ministry of Agriculture staff in the Sub County (Arun, 1986).According to Mugenda (2003), tools of data collection ought to be valid and reliable if they have to produce useful and accurate information. It can only be said the tools have provided valid results when they measure accurately what they are intended to measure. The instruments were checked by the faculty members such as the supervisors to ascertain whether the items were clear and could lead to obtaining relevant data. Further, the researcher sought opinions from experts and the Ministry of Agriculture staff in the Sub County to validate the instruments.

3.7.2 Reliability of the Instruments

Reliability of an instrument is the level of consistency with which the research instrument measures whatever it was planned to measure and yields consistent outcomes. This manner alludes to the degree to which the findings can be reproduced by another researcher (Silverman 2005). The study utilized a test, retest strategy to find out research instruments' reliability.

This will involve conducting a pilot study on the farmers and interviewing the same farmers after two weeks. The reliability coefficient of the instrument will be computed by Pearson product moment of correlation method where a coefficient of correlation will be obtained at 5% degrees of confidence between the first and the second scores using the formula below:-

$$r = \frac{\sum XY - (\sum y)(\sum X)}{N}$$

$$\left[\sum X^2 - \frac{(\sum X)^2}{N}\right]\left[(\sum y) - \frac{(\sum y)^2}{N}\right]$$

Where r = coefficient of correlation; x =the scores of the first responses,

Y= the scores of the second responses;

$\sum X$ = the sum of scores in the first respondents;

$\sum y$ = the sum of the scores in the Y distribution;

N = Number of paired X and Y scores.

The range of the reliability co-efficient of 0.78 was obtained for the questionnaires. This was in concurrence with Fraenkel and Wallen (2000), who noted that a co-efficient of 0.7 provides a minimum threshold to confirm reliability of a research instrument.

3.8 Data Collection Procedures

The researcher sought permit from the Ministry of Education, Science and Technology and a permit issued authorizing the researcher to conduct the study. Using the letter obtained from National Council for Science and Technology the researcher sought permission from the Sub County Commissioner and County Director of Education to be introduced to the wards heads especially the Sub County Agricultural Extension Officers (SCAEOs). The researcher personally visited the wards and sought permission from the wards head of agriculture and explained the purpose of the visit. The researcher introduced to the farmers by the frontline extension officers and presented the transmittal letter to all the respondents. This ensured confidentiality of information and truthful and accurate responses from the farmers. The farmers were assured that the information they gave was purely for research purposes. The research assistants were given out the questionnaires to the farmers at their homes with the help of the frontline extension officer to avoid suspicion. Hence, the researcher collected the information and it took a period of one week after which data was submitted for analysis.

3.9 Data Analysis Procedures

The data from questionnaires was coded, entered, cleaned and analyzed using statistical formulae and tabulations to analyze the phenomenon between the subsidies and maizeproduction. The output was presented in frequencies, percentages, means, tabulations and graphs. The interview and observation were subjected to content analysis to describe, decode, translate, and develop understanding through a detailed description of the situation and presented in themes.

3.10 Ethical Consideration

Before the administration of the questionnaire, the researcher sought permission to conduct the study. The researcher applied for a permit from the National Council of

Science and Technology (NACOSTI) to collect data from the field. Further request was sought from the County Commissioner and County Director of Education, to allow the researcher to collect data from the Sub County. Respondents were informed and consent sought before data collection. The researcher kept the informants information confidential through several efforts among them being that they were firmly instructed not to write their names on the tools of data collection. All the documents are in appendices F, G and H for NACOSTI, Ministry Of Education-Trans-Nzoia West County and County Commissioners of Trans-Nzoia respectively were sought first before data collection.

CHAPTER FOUR

DATA ANALYSIS, PRESENTATION AND INTERPRETATION

4.1 Introduction

This chapter presents data analysis and discussion of the findings on the farm inputs subsidies influence on maize production in Trans Nzoia West Sub County, Trans-Nzoia County, Kenya. The data was analyzed with the help of a computer program, SPSS version 20.0. The chapter is organized into two major sections, namelydata analysis results and discussion of the findings.

4.1.1 Questionnaire Return Rate

A total of 150 farmer questionnaires were administered and 10 for Agricultural officers and all were returned. The return rate was 100% since the researcher followed the administration of the questionnaires in person.

4.1.2 Background Information of Respondents

In response to the background information, the farmers were first asked to indicate their sex in terms of either male or female; and age bracket of the respondents and their working experience. The findings were recorded in the table 3.

Table 3: Farmers' bio-data

Sex	Frequency	Percentage (%)
Male	87	58
Female	63	42
Age bracket(years)	Frequency	Percentage (%)
19-25	8	5.3
26-35	47	31.3
36-40	46	30.7
41 and above	49	32.7
Working Experience (years)	Frequency	Percentage %
2-5	8	4.7
6-10	33	22
11-15	43	28.7
16-20	24	16
21 and above	42	28.6

It was found out that (58%) of the respondents were male while (42%) were female. The differences in gender presentation are small since the study ensured good gender representation. An overwhelming majority of the farmers, 32.7% who participated in the study were 41 years of age and above. However, a small percentage of them, 5.3% were between the ages of 19-25 years. This was a reflection that the youth were involved in agriculture. On working experience, majority of the farmers, 73.4% had more than 11 years as farmers. Another slightly more than a quarter of them, 26.7% had a working experience of not more than 10 years.

4.1.3 Background Information for Agricultural Officers

The agricultural officers were also asked to indicate their background information. These include sex, age, and academic qualification, working experience and work designation. The background information is as summarized by the table 3.

Table 4: Agriculture offices bio data

Category	Frequency (F)	Percentage (%)
Sex		
Male	10	100
	Age	
26-30 years	2	28.6
31-50 years	6	42.8
Above 50 years	2	28.6
	Academic Qualification	
Certificate	3	42.9
Diploma	7	57.1
	Working Designation	
Sub County Agriculture officers	6	42.8
Divisional Agricultural Extension Officers	2	28.6
Assistant Agricultural Officer	2	28.6
	Working Experience	
Less than 1 year	1	10.0
2-5 years	1	10.0
6 years and above	8	80.0

As tabulated, all of the agricultural officers 100% who participated in the study were male. In terms of age, a good majority of the officers were in the bracket of 31-50 years. In academics, majority of officers had a Diploma as the highest level of education.

With reference to the working designation, those who participated in the study were made up of Sub CountyAgricultural Officers, Assistants Sub County Agricultural Officers and Agricultural Extension Officers.

4.2 Amount of the Farm Subsidies Disbursed on Maize Production

4.2.1 Type of Maize Seed

The researcher wanted to find out the type of maize seed the farmers have been planting before government subsidies were introduced. The following were there responses

Table 5: Type of Maize Seed

Type of maize seed	Frequency	Percentage
Certified	150	100
Uncertified	0	0
Total	150	100

From table 5 it was found out that all farmers (100%) used certified seed in their farms before the introduction of government subsidies.

4.2.2 Type of Certified Seeds on the Subsidized Programme

Farmers were asked to indicate the type of government seed they were given under the government subsidized programme. Below were their responses.

Table 6: Type of Certified Seeds given by Government

Type of certified seed	Frequency	Percentage
Kenya seed	78	52.00
Western seed	53	35.32
Pan95	15	10.00
Tembo	2	1.34
PundaMilia	2	1.34

From the table6, the farmers were supplied with five varieties of certified seed however, 52.0% of them were supplied with Kenya Seed Certified seed followed closely with Western Seed at 35.33%.The other type of certified seed supplied were

10% and below. This study concurred with studies done Solem*at al*., (1985), which recommended that for agricultural production to grow, modern and quality agricultural inputs arefundamental.The use of quality seeds and fertilizers and other agronomic plant propagation material should be supplied to farmers in time, or appropriate credit given to farmers.

4.2.3 Process of Subsidy Distribution

The farmers were asked to indicate the method used by government in distributing the farm subsidies. Table 7 shows the reactions of farmers on the process of subsidy distribution.

Table 7: Process of subsidy distribution

Mode of distribution	Frequency	Percentage
Local administration	0	0
National cereals and produce board	145	96.67
Agricultural officers	5	3.33
Local business men	0	0
Agro vets	0	0
Farmers Associations	0	0
NGOs/CBOs	0	0
Total	150	100

Findings as indicated in table 7 showed that the major distribution channel of subsidies was the National cereals and produce board 96.67% with a paltry 3.33% saying that the subsidies were distributed by the agricultural offices. This finding differed significantly with studies by Denning et al, (2009) who found out that untimely and effective release of resources by the Ministry of Finance and National Planning in Malawi,who argued that the red tape in tendering procedures and processes lead to delayed payments to input suppliers and service providers under the Fertilizer Subsidy Programme, leading to unstable supply chain, hence affecting

the maize production. It is likewise feared herein that the weak supply chain in Trans Nzoia County may affect the production side.

4.2.4 Farm Subsidies on Yield

The respondents were asked to indicate what theyharvested in terms of bags in case they used uncertified seed, certified seed before the subsidies were given and after the subsidies were given. Table 8 illustrates the responses of the respondent's farm subsidies on yield.

Table 8 Farm subsidies on yield

Type of seed	5-10		11-15		16-20		21-25		25 above	
	F	%	F	%	F	%	F	%	F	%
Uncertified seed	0	0	0	0	0	0	0	0	0	0
Certified before subsidy	16	10.67	35	23.33	79	52.76	10	6.67	0	
Certified after subsidy	0	0	0	0	7	4.67	129	86	15	10

Table 8 shows that there was a significant effect of subsidized seed given that majority of the farmers produced between 16-20 bags using certified seed as compared to 86% of the farmers who produced between 21-25 bags after using subsidized maize seed. This study agrees with studied done by Morris *et al.,* (2007) which observed that in Asia, farm subsidies are considered to have played an important role in promoting increased use of fertilizer and to have partly contributed to the significant increases in yields.

4.2.5 Best Distribution Channel

The respondents were asked to recommend the best distribution channel of subsidized maize seeds. Table 9 illustrates the responses of the respondents on the best distribution channel.

Table 9: Best distribution channel

Distribution channel	Frequency	Percentage
Agricultural office	107	71.33
National Cereals and Produce Board	26	17.33
Farmers Associations	14	9.33
Agro vets	3	2.01
Total	150	100

Majority of the respondents 71.33% said they wanted the government to supply the subsidized seed through the extension officers as opposed to the current situation where distribution is done through National Cereals and Produce Board. Only 17.33% felt that it was right to distribute through the National Cereals and Produce Board.

4.2.6 Type of fertilizer used by farmers

Respondents were asked to state the type of fertilizer they used in their farms. Table 10 indicatesresponses of the respondents on the type of fertilizer used.

Table 10: Type of fertilizer usedby farmers

Type of fertilizer	Frequency	Percentage
Inorganic fertilizer	150	100
Organic fertilizer	0	0

From the responses in table 10 it was clear that all the farmers (100%) used inorganic fertilizer in planting maize meaning that farmers only relied on commercial fertilizers on maize production. This was the so because majority of the farmers no longer use organic fertilizers in production of maize crops especially, on large scale farming. This further is compounded by the number of livestock kept at home to produce the organic fertilizer.

4.2.7 Type of fertilizer given by government

Respondents were asked to indicate the type of fertilizer they are given by government. Table 11 displays the responses of the informants on the type of fertilizer given by government.

Table 11: Type of fertilizer given by government

Fertilizer type	Frequency	Percentage
DAP Chapa Meli	150	100
CAN Chapa Meli	150	100

It was found out that the government supplied two types of fertilizer that is both DAP Chapa Meli and CAN Chapa Meli given that 100% of them agreed.

4.2.8 Method of fertilizer distribution

The researcher wanted to find out what method of distribution the government used to distribute the fertilizer. Table 12 illustrates the responses of the respondents regarding the method of fertilizer distribution in Trans Nzoia West Sub County.

Table 12: Method of fertilizer distribution

Mode of distribution	Frequency	Percentage
Local administration	0	0
National Cereals and Produce Board	145	96.67
Agricultural officers	5	3.33
Local business men	0	0
Agro vets	0	0
Farmers Associations	0	0
NGOs/CBOs	0	0
Total	150	100

From the table 12 above, the major distribution channel of fertilizer subsidies was the National Cereals and Produce Board 96.67%.Only a paltry 3.33% said that the subsidies were distributed by the agricultural offices.

4.3 Effect of Fertilizer Subsidy on Maize Yield

4.3.1 Significance of Fertilizer Application on maize yields

The researcher wanted to find out the significance of fertilizer application on maize yields. Table 13 shows the findings of the significance of fertilizer application on maize yields.

Table 13:Significance of fertilizer application on maize yields

Type of fertilizer	5-10		11-15		16-20		21-25		25 above	
	F	%	F	%	F	%	F	%	F	%
Inorganic fertilizer use after	0	0	0	0	23	15.33	87	58	40	26.67
Inorganicfertilizer use before	16	10.67	35	23.33	79	52.76	10	6.67	0	0

From table 13 it was found that majority of the respondents 58% realized an improved harvest of between 21-25 bags of maize with subsidized inorganic fertilizer; as compared to 52.76 of the respondents who argued that they had harvested between 16-20 bags of maize while using inorganic fertilizer before introduction of subsidy.

4.3.2 Net saving per year

The farmers were requested to indicate the amount of money they saved with the introduction of subsidized inorganic fertilizer. Table 14 illustrates the responses of the farmers on the net saving per year on subsidized inorganic fertilizer.

Table 14: Farmers' net saving per year

Savings in Kshs	Frequency	Percentage
Below 30000	1	4.67
31000-40000	16	10.67
41000-50000	17	11.33
Above 50000	116	73.33
Total	150	95.33

As seen from table above, majority of the respondents 73.33% had a net saving of above Kshs 50000 after using subsidized fertilizer. This was an indication that they were value addition from subsidized fertilizer in comparison the fertilizer they were using before.

4.3.3 Channel of distribution

When the farmers were prompted to give the appropriate channel of distribution they preferred, they had the following preference in table 15.

Table 15: Fertilizer channel of distribution

Mode of distribution	**Frequency**	**Percentage**
Agriculture office	145	96.67
National Cereals and Produce Board	5	3.33
Total	150	100

Majority of the respondents 96.67% said they preferred agriculture office distribution as opposed to National Cereals and Produce Board.

The agricultural officers were also asked to give their opinion on the adequacy of the amount of farm subsidy that was being distributed by the government to the farmers and how it influenced crop production in the area. All the farmers were in agreement that the amount of farm subsidy distributed was not enough. One of them went on ahead to report that: The amount of farm subsidies distributed by the government is

not adequate. This is because less than a half of the farmers in the region get access to the farm inputs. However, the small amount of farm subsidy provided by the government does influence positively the increase of crop production in the region by 30% (Agricultural Officer I, 2012). In agreement, another officer stated that: The farm subsidy provided is not enough and the government may not be able to satisfy all the needs of farmers. This is because the farm subsidy distributed by the government only acts as a demonstration kit to the farmers that using right amount of seeds and fertilizers leads to high yields. Besides, most of the farm inputs supplied gives high yields. Therefore farmers are encouraged to adapt to the inputs.

4.4 Type of farm inputs subsidies supplied and Maize Production

The type of input or farm subsidy if not correct may influence the output of an item or crop yield to some extent. The researcher wanted to find out production in bags before and after subsidies was given. The result was as below;

4.4.1 Influence of Maize Seeds and fertilizer Subsidy on Maize Yield

The researcher wanted to find out the significance of fertilizer application on maize yields. And table 16shows the findings of the significance of fertilizer application on maize yields.

Table 16: significance of fertilizer application on maize yields

Type of input(bags)	5-10		11-15		16-20		21-25		25 above	
	F	%	F	%	F	%	F	%	F	%
After subsidy										
Maize seed/Inorganic fertilizer	0	0	0	0	23	15.33	87	58	40	26.67
Before subsidy										
Maize seed/Inorganic fertilizer	16	10.67	35	23.33	79	52.76	10	6.67	0	0
Organic	2	1.33	110	73.33	38	25.33	0	0	0	0

From table 16 it was found that majority of the respondents 58% realized an improved harvest of between 21-25 sacks of maize with subsidized inorganic fertilizer; as compared to 52.76 of the respondents who argued that they had harvested between 16-20 bags of maize while using inorganic fertilizer before introduction of subsidy.

During the interview, the Agricultural Officers were also asked to give their opinions with regard to type of farm inputs that the government provided in the area. Most of them stated that the government provided hybrid seeds for maize, basal fertilizers (Diammonium phosphate (D.A.P) and top dressing fertilizers (Calcium Ammonium Nitrate (C.A.N). To substantiate the point, one of the officers explained that: The government provides- 10 kg of hybrid seed maize, 50 kg of (Diammonium phosphate (D.A.P)) basal fertilizer and 50 kg C.A.N for top dressing. In most cases, these farm inputs are enough for 1 acre of land (Agricultural Officer V, 2012).

4.4.2Quality of Subsidy and Maize Production

For any agricultural sector to grow, many determinants come into play. For instance, the seeds ought to be of good quality, the fertilizers should be appropriate to the soil type, plant propagation material so be of good quality, the agricultural chemicals should be correct and affordable and readily available credit to purchase these and other inputs should be given by the providers. However, if these inputs do not meet the standard and quality recommended for agriculture, crop production may thus be influenced to some extent. This study was meant to determine the extent to which the quality of the farm subsidy given to farmers under this programme influenced maize production. The respondents therefore were asked to indicate the quality of farm subsidy and how it influenced maize production in their farms. Table 17 indicates the responses from the respondents on the Influence of quality of farm subsidy on production.

Table 17: Influence of quality of farm subsidy on production

	Quality of the Maize Seed							
Type of input	**High quality**		**Medium quality**		**Low quality**		**Poor quality**	
	F	%	F	%	F	%	F	%
Certified maize seeds	143	95.33	7	4.67	0	0	0	0
Inorganic fertilizer	143	95.33	7	4.67	0	0	0	0

From table 17 it majority of the respondents 95.33% were satisfied that both the certified maize seed and fertilizer subsidy given were of high quality. Only a paltry 4.67% felt that the inputs were of medium quality.

With reference to the extent to which the quality of farm subsidy influenced the

maize production, the Agricultural Officers were noted to have various views during the interview. First, the officers rated the quality of the farm seeds and fertilizers provided by the government as being good. This, they said was because it resulted into increased crop production and the subsidies had been certified as to being safe. Secondly, they reported that due to its good quality, some of the farmers opted to adopt it so as to improve crop production in their farms and be able to sustain their families and community at large.

4.4.3Affordability of subsidized inputs

The farmers were asked to indicate the affordability of both subsided inputs. Therefore, table 18 shows the responses of the farmers on the affordability of subsidized farm inputs.

Table 18: Affordability of subsidized farm inputs

Affordability of inputs	Frequency	Percentage
Yes	148	98.67
No	2	1.33

Majority of the respondents 98.67% said were of the idea that the inputs were affordable compared to the unsubsidized inputs. When asked how they rate the cost of inputs on production, all the respondents 100% said that the low cost encouraged them to apply both the maize seed and fertilizer as recommended by the Agricultural Extension Officers thus, boosting production per acre.

4.4.4Soil Testing and Maize Production

The respondents were asked to indicate if they tested soil Ph. and nutrients before planting. Majority of them responded to the negative saying it was only occasionally that extension officer's sampled farms for testing and not that they did the testing by themselves.

When asked to indicate whether they experienced losses at both pre-harvesting and post-harvesting period, 100% of them responded to the affirmative that indeed they experienced the losses. For instance majority of them cited theft when maize is green and poor drying equipment storage as the leading agents of losses pre and post harvesting respectively. When asked to state mitigation measures that ought to be employed to reduce the losses, the farmers cited improvement of security locally and dealing firmly with maize thieves as a remedy to maize loss to pre-harvesting. They too said that the County Government should set up mini driers at location level to mitigate post-harvesting loss.

The researcher asked the respondents if they had ever had maize input subsidy programme. All of the respondents answered to the negative. The respondents were asked if the inputs were availed on time of planting season which they responded to the positive. The farmers said that they did not have loan schemes where they could borrow money from. When asked why they did borrow the loans they said they did not know where to get the loans.

4.5.4 Rain and Production of Maize

The respondents were asked to state whether they had enough rainfall and how the rain timing affected production. Thus, table 19 shows responses of the farmers on rain and production of maize.

Table 19: Rain and production of maize

Rainfall reliability	Frequency	Percentage
Yes	146	97.33
No	4	2.67

From table 19, it was found out that rainfallwas reliable in the study area as majority of the respondents (97.33%) respondent to the affirmative that rainfall was reliable in

most of the farming seasons. Only a small fraction of the respondents (2.67%) who said that rainfall was an impediment to production. They drew an example for last year when rains came late and yet farmers had planted on the usual time leading to poor germination which led to poor harvest. On temperatures majority of the respondents said that they had not suffered losses due to high temperatures. From this scenario, it could be argued that rainfall and high temperatures were not largely a factor that affected maize production in the study area. This finding substantially agrees with findings by Harvest Choice (2012) who found out that rain variability was a characteristic that influences crop yield in Sub- Saharan Africa.

CHAPTER FIVE

SUMMARY, CONCLUSION AND RECOMMENDATIONS

5.1 Introduction

This chapter presents the summary, conclusions and recommendations based on the analysis of the influence of farm subsidy on sustainable food production in Trans-NzoiaWest Sub County, Trans-Nzoia County.

5.2 Summary

The study embarked on examining the farm input subsidies influence onmaize production. It was guided by the following three research objectives: To examine the influence of the amount of the farm subsidies disbursed, assess the type of farm inputs subsidies supplied, to evaluate the influence of quality of the farm subsidy supplied to farmers and the challenges of farm input subsidies on maize production in Trans Nzoia West Sub County. This study used two tools of data collection namely the questionnaire and interview guide. The study sampled 150 respondents for data collection. The collected data from all the farmers were statistically analyzed with the help of Statistical Package for Social Sciences (SPSS Version 20.0). Those gathered from the agricultural officers were analyzed qualitatively. Descriptive statistics such as frequencies and percentages, and tables were used to summarize the data.

From the data analysis based on the objectives, it was found out that all farmers used certified seed in their farms after the introduction of government subsidies. On the type of certified seed given for subsidy, majorly the farmers were supplied with five varieties of certified seed namely Kenya Seed, Western Seed, Pan95 Tembo and PundaMilia. It was observed that, out of these five varieties, the dominating varieties were those supplied by Kenya Seed and Western Seed. The major distribution

channel of the inputs was the National Cereals and Produce Board. It was also found out that there was a significant effect of subsidized seed given that majority of the farmers produced bagsof between 21-25 using subsidized inputs as opposed to 16-20 bags of maize before the use of subsidies.

Asked to suggest their preferred distribution channel, Majority of the respondents proposed that they wanted the government to supply the subsidized seed through the Extension Officers as opposed to the current situation where distribution is done through National Cereals and Produce Board. All farmers used inorganic fertilizer on their farms and that DAP Chapa Meli and CAN Chapa Meli were the types of fertilizer supplied. The major distribution channel of fertilizer subsidies was the National Cereals and Produce Board. Majority of the respondents had a net saving of above Kshs. 50,000 after using subsidized fertilizer. Majority of the respondents indicated they preferred agriculture office distribution as opposed to national cereals and produce board.

On the type of input or farm subsidy used by farmers, majority of the respondents realized an improved harvest of between 21-25 bags of maize with subsidized inorganic fertilizer. Majority of the respondents were satisfied that both the certified maize seed and fertilizer subsidy given were of high quality. The quality of the farm subsidies supplied to farmers increased crop production.

On affordability, majority of the respondents said the inputs were affordable. On soil testing, it was found out that the soil Ph and nutrients were not always checked. On rainfall reliability, majority of the respondents said rainfall was reliable safe for rare case when rain set in late.

On the challenges that farmers face, majority of the farmers noted that the cost of the inputs were very high. They also stated that the subsidies given are usually not

enough especially for the farmers who have larger farms. On soil pH, majority of the farmers noted that the government did not regularly test the soil pH and doing individual tests was expensive. The other challenge noted by the respondents was poor distribution of the farm inputs and unpredictable rain patterns.

5.3 Conclusion

From the study analysis it was concluded that, overly, amount of the farm subsidies type of farm inputs subsidies quality of the farm subsidy given to farmers in the subsidy programme positive significant influence on maize production in Trans-Nzoia West Sub- County. It was also concluded that several challenges affected the subsidy programme. The challenges included but not limited to poor channel of distribution of subsidized, lack of regular soil Ph and nutrients testing and the small number of farmers under the programme. It was also concluded that farmers lacked credit facilities to enable them buy the subsidies on large scale. It was concluded too that, the farmers suffered both pre-harvesting and post harvesting losses.

5.4 Recommendations

Based on the summary and conclusions, the study made the following recommendations:

It was found out that the input subsidies were provided to the farmers on time but the collection points were distant from the farmers. Hence, it is the government that should reduce the distribution points by distributing the subsidies through locationAgricultural Officers as opposed to National Cereals and Produce Board.

Based on the challenge of limited number of the farmers who benefited from the subsidy programme, the study recommends that the government should increase capitation for the programme to bring more farmers into the programme to improve production of maize given that there is a significant increase of production under the

subsidy programme.

The government through the Ministry of Agriculture in collaboration with the County Government and farmers Associations should come up with capacity building events whereby the farmers will be able to learn more on how they can incorporate the latest technology for agriculture practices. Moreover, through these events, the farmers may also be able to learn more about various agro-economic practices.

To avoid shortages and disruption in the disbursement and distribution of the farm subsidies to the local farmers the government through the Ministry of Agriculture should formulate policies that will encourage the development of strong supply markets, to sustain the effort once the subsidy has been removed.

The government through the agricultural extension office should regularly do a soil pH tests to enable the farmers apply the right fertilizer. The government also should subsidize further the cost of inputs to allow many farmers to access. The government should make the subsidy programme accessible to every farmer.

The study also recommends that the government should initiate or encourage microcredit institutions who can lend farmers soft credit which will in turn enable them expand their Agribusiness.

5.5 Recommendation for Further Studies

Based on the current study, several gaps emerged which ought to be investigated. They include: A Study ought to be done to evaluate the effectiveness of inorganic fertilizers application and improved maize varieties in enhancing yields.

This researcher recommends that similar studies should be in other counties to find out the effect of farm subsidies on agricultural production.

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APPENDICES

APPENDIX A: LETTER OF TRANSMITTAL

P.O BOX 4434 – 30200,

KITALE

Dear Respondents,

Thank you very much for your willingness to participate in this survey. This questionnaire is meant for research on Assessment of the farm inputs subsidies influence on maize production in Trans-Nzoia West Sub- County. Your responses will enable Agriculture Extension officers and other stakeholders understand how the programme can be improved and how maize production can also be improved.

Your responses will be highly appreciated. Please note that all the information you providewill be treated as confidential and will be used only for this research work.

Thank you for your participation and effort in completing the questionnaire.

Yours faithfully,

BarasaProtusWafula

APPENDIX B: QUESTIONNAIRE FOR FARMERS

I am a student at the Kisii University taking a degree in Master of Arts in Geography. You have been selected randomly to participate in this research on Assessment of the farm inputs subsidies influence on maize production in Trans-Nzoia West Sub-County. The information you provide is meant for academic purpose only. Do not write your name on this questionnaire. Thank you for your willingness to participate.

Section A: Background Information

1. Please indicate yourSex

   Male [ ] Female[ ]

2. Please state your current Age bracket?

Below 18 years[ ] 19-25 years [ ]26- 35 years [ ] 36-40 years [ ]41 years and above [ ]

3. Level of education

   PhD [ ] Masters [ ] Bachelor's Degree [ ] Diploma [ ]Certificate [ ]

   Secondary [ ] Primary [ ] None [ ]

4. Indicate your years of experience as afarmer

Below2years[ ]2-5 years[ ]5-10 years[ ]10-15 years[ ]15-20 years[]
Above20years [ ]

Section B:To Examinethe Influence of the Amount of the Farm Subsidies Disbursed on Maize Production in Trans Nzoia West Sub County

What type of maize seed have you been planting on your farm?

Certified [ ] Uncertified [ ]

What type of certified maize seeds are given by government on subsidized basis?

[ ] Kenya seed (type----------)

[ ] Western Seed (Type----------)

[ ] Others (specify----------)

1. What the process of distributing the subsidies?

   [ ] by the Area local administration[ ] by Agricultural officers

   [ ] National Cereals and Produce Board[ ] Local business men

   [ ] Agro vets shops[ ] Farmers Association[ ] NGOs/CBOs

2. What has been the effect of seed subsidies on your maize yield?—Fill the table

	Uncertified seeds (Maize production per acres)	Certified seed before subsidies (Maize production per acres)	Certified seeds under subsidies regime (Maize production per acres)
Kg/Acre			

3. What is your net saving on certified seeds per year and per acre with the introduction of subsidized certified maize seeds)? Kshs /acre----------

4. How best would you recommend the handling and distribution of subsidized certified maize seeds?

5.What type of fertilizers have you been using on your farm?

Organic [ ] Inorganic [ ]

6. What type of fertilizers is given by government on subsidized basis?

   [ ] DAP (type----------)

   [ ] CAN (Type----------)

   [ ] Others (specify----------)

7. What is the process of distributing the subsidizer fertilizer?

   [ ] by the area local administration[ ] by Agricultural officers

   [ ] National Cereals and Produce Board[ ] Local business men

[ ] Agro vets shops[ ] Farmers Association[ ] NGOs/CBOs

8. What has been the effect of fertilizer subsidies on your maize yield?—Fill the table

	Organic	Inorganic fertilizer before subsidies (Maize production per acres)	Inorganic fertilizer under subsidies regime (Maize production per acres)
Kg/Acre			

9. What is your net saving on inorganic fertilizer per year and per acre with the introduction of subsidized inorganic fertilizers)? Kshs /acre
10. How best would you recommend the handling and distribution of subsidized inorganic fertilizers?

SectionC: To Assess the Type of Farm inputs Subsidies Supplied influence Maize Production in Trans Nzoia West Sub County

Kindly fill the table below

Production in Bags		
Type of subside	Production per Acre with subside (In bags)	Production per Acre without subsidies (In bags)
Certified maize seeds		
Inorganic fertilizer		
Other subsidies (List		
Estimated income		
	Income per acre with subsidies	Income per income without subsidies
Certified maize seeds		
Inorganic fertilizer		
Other subsidies (List		

Section D: To Evaluate the influence of Quality of the Farm Subsidy given on Maize Production in Trans Nzoia West Sub County

11. What would you say about the quality certified maize seed supply under subsidy is

    [ ] high quality[ ] medium quality[ ] Low quality [ ] Poor quality

12. What would you say the quality inorganic supplied under subsidy is

    [ ] high quality[ ] medium quality[ ] Low quality[ ] Poor quality

Section D: Challenges of farm inputs on Maize Production in Trans Nzoia West Sub County

13. Do you use organic fertilizer in your maize crop?

    Yes [] No []

If your answer above is (NO) explain the reason and impact on maize production……Is the price of maize seed and fertilizer affordable to you?

Yes [ ] No [ ]

How has the cost of maize seeds and organic fertilizer influenced your maize production?.....……

Do you test soil acidity and nutrients on your farm?

If your answer is NO explain the reasons and impact on maize production?

Have you experienced maize losses at pre --harvesting?

Yes [ ] No [ ]

Describe the losses and how you could have mitigate against losses----------Have you experienced maize losses at post-harvest?

Yes [ ] No [ ]

Describe the losses and how you could have mitigate against losses----------Has

there been a maize inputs price subsidizing program you have benefited from?

Yes [ ] No [ ]

Explain why you have not benefited from the inputs subsidizing program……

Are farm inputs (Maize seeds and organic fertilizer) available during planting season in your location?

Yes [ ] No [ ]

Describe inputs availability in your location and their impacts to maizeproduction

……

Do you access loan facilities for maize production from financial institutions?

Yes [ ] No [ ]

Explain what you think is the reasons for your access or lack of access to credit and the impact to maize production……

Has rainfall been reliable for maize production in your locality?

Yes [ ] No [ ]

Describe the rainfall situation and the impacts on maize crop

……

Has your maize crop been affected by high temperatures?

Yes [ ] No [ ]

Describe the effects of high temperature on your maize production

……

APPENDIX C: INTERVIEW GUIDE FOR AGRICULTURAL OFFICERS

Section A: Background Information

1. Sex Male [ ] Female[ ]

b. Age18-25years [ ]26-30 [ ] 30-50 [ ]Above 50 [ ]

2. Academic qualification

Primary school [ ] High school [ ] Degree [ ] Masters [ ]

What is your experience in this

department?_____

Section B: ***Influence of Farm inputs Subsidy on Food sustainability***

Are the farm inputs subsidies provided by the government in this area in time? (Yes / No). Explain your answer._____

1. What is your opinion with regard to the amount of farm input subsidy by the government for the farmers?. Are they enough? Please explain your answer._____

2. Is the amount of farm subsidy supplied to farmers adequate? (Yes / No). How the amount does supplied influence crop production in this area?Explain

How would you rate the quality of farm seeds and fertilizers provided by thegovernment in this area? (poor average,good)

Please explain the influence of the quality of farm input subsidy provided by the government on production in this area

What type of farm input does government provide in thisarea?_____

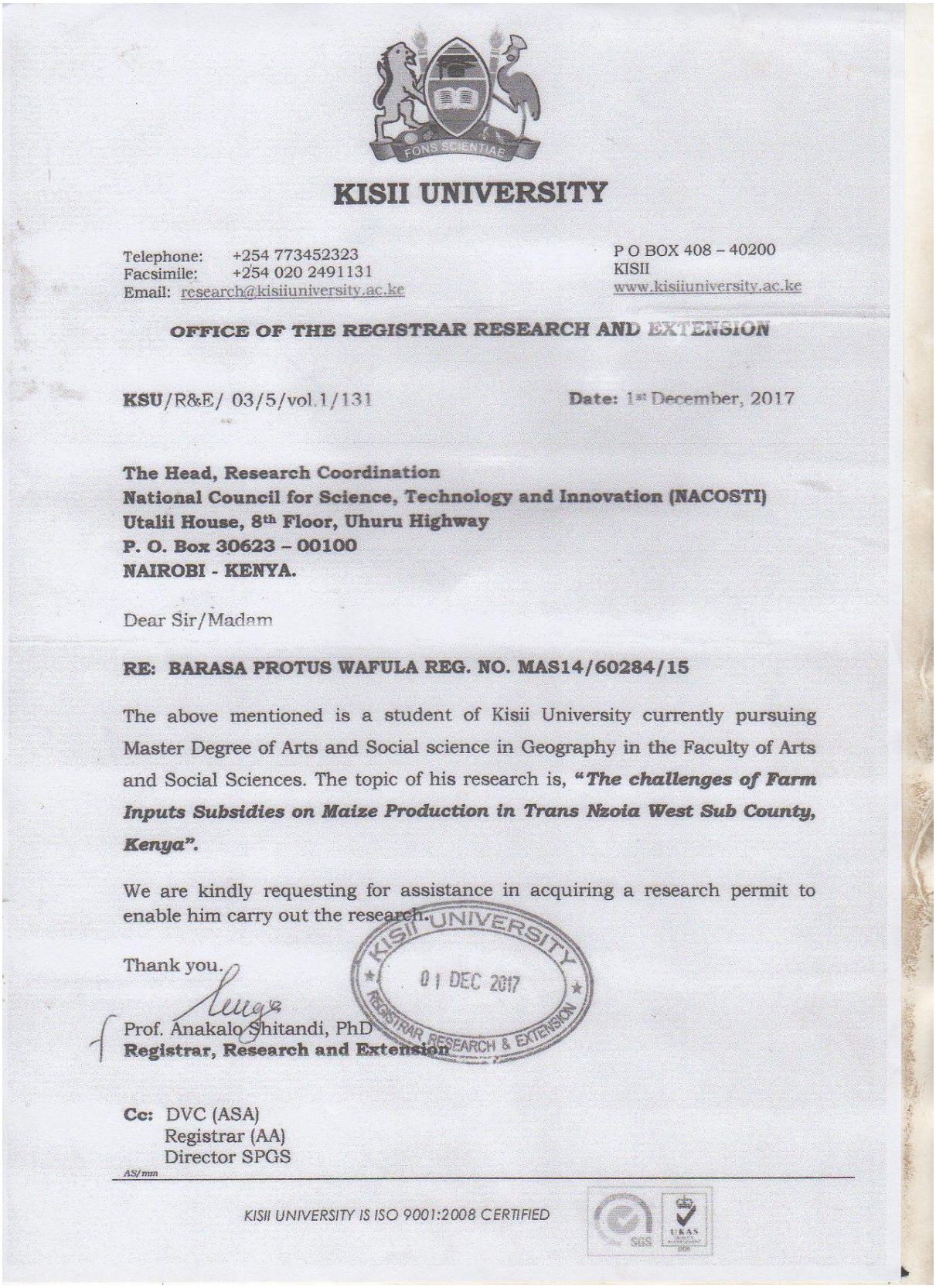
3. What measures do you think can be put in place to improve Farm inputs Subsidies for Food sustainability in Trans Nzoia West Sub County?_____

APPENDIX D: OPERATIONALIZATION OF VARIABLES TABLE

S/No	Research Objective	Research Question	Type of Variable		Indicators	Measure	Level of scale	Data collection methods	Type of analysis
			Independent variable(X)	Dependent variable(Y)					
1.	To examine the influence of the amount of the farm subsidies disbursed on maize production in Trans Nzoia West Sub County.	How does the amount of farm inputs determine maize production farmers in Trans-Nzoia West Sub-county?	Amount of farm inputs e.g. maize seeds, organic fertilizers e.t.c.	Maize production	Number of weeks before planting time(X) Number ofmaizebags harvested per acre(Y)	Weeks 90kg bags	Ratio	Survey	Quantitative
2.	To assess how the type of farm inputs subsi	How does type of subsidy maize farming techniques	Type of farm inputs	Maize production	Kshs. spent on transportation and storage before inputs reachthe farmers	Kenya shillings Kenya shillings	Ratio	Survey	Qualitative

	dies supplied influence maize production in Trans Nzoia West Sub County.	determine maize production in Trans Nzoia West Sub County?			store(X) Gross margin of maize per acre.(Y)				
3.	To evaluate how the quality of the farm subsidy given influence maize production in Trans Nzoia West Sub County.	How does quality of maize subsidy influence maize production among farmers in Trans Nzoia West Sub County?	Quality of farm inputs	Maize production	Yield potential for maize seed given (X) Number of bags harvested per acre(Y)	Bags /acre 90 k	Interval	Survey	Qualitative/ Quantitative

APPENDIX E: AUTHORITY LETTER



KISII UNIVERSITY

Telephone: +254 773452323
Facsimile: +254 020 2491131
Email: research@kisiiuniversity.ac.ke

P O BOX 408 – 40200
KISII
www.kisiiuniversity.ac.ke

OFFICE OF THE REGISTRAR RESEARCH AND EXTENSION

KSU/R&E/ 03/5/vol.1/131 **Date:** 1st December, 2017

The Head, Research Coordination
National Council for Science, Technology and Innovation (NACOSTI)
Utalii House, 8th Floor, Uhuru Highway
P. O. Box 30623 – 00100
NAIROBI - KENYA.

Dear Sir/Madam

RE: BARASA PROTUS WAFULA REG. NO. MAS14/60284/15

The above mentioned is a student of Kisii University currently pursuing Master Degree of Arts and Social science in Geography in the Faculty of Arts and Social Sciences. The topic of his research is, ***"The challenges of Farm Inputs Subsidies on Maize Production in Trans Nzoia West Sub County, Kenya".***

We are kindly requesting for assistance in acquiring a research permit to enable him carry out the research.

KISII UNIVERSITY 01 DEC 2017 REGISTRAR RESEARCH & EXTENSION

Thank you.

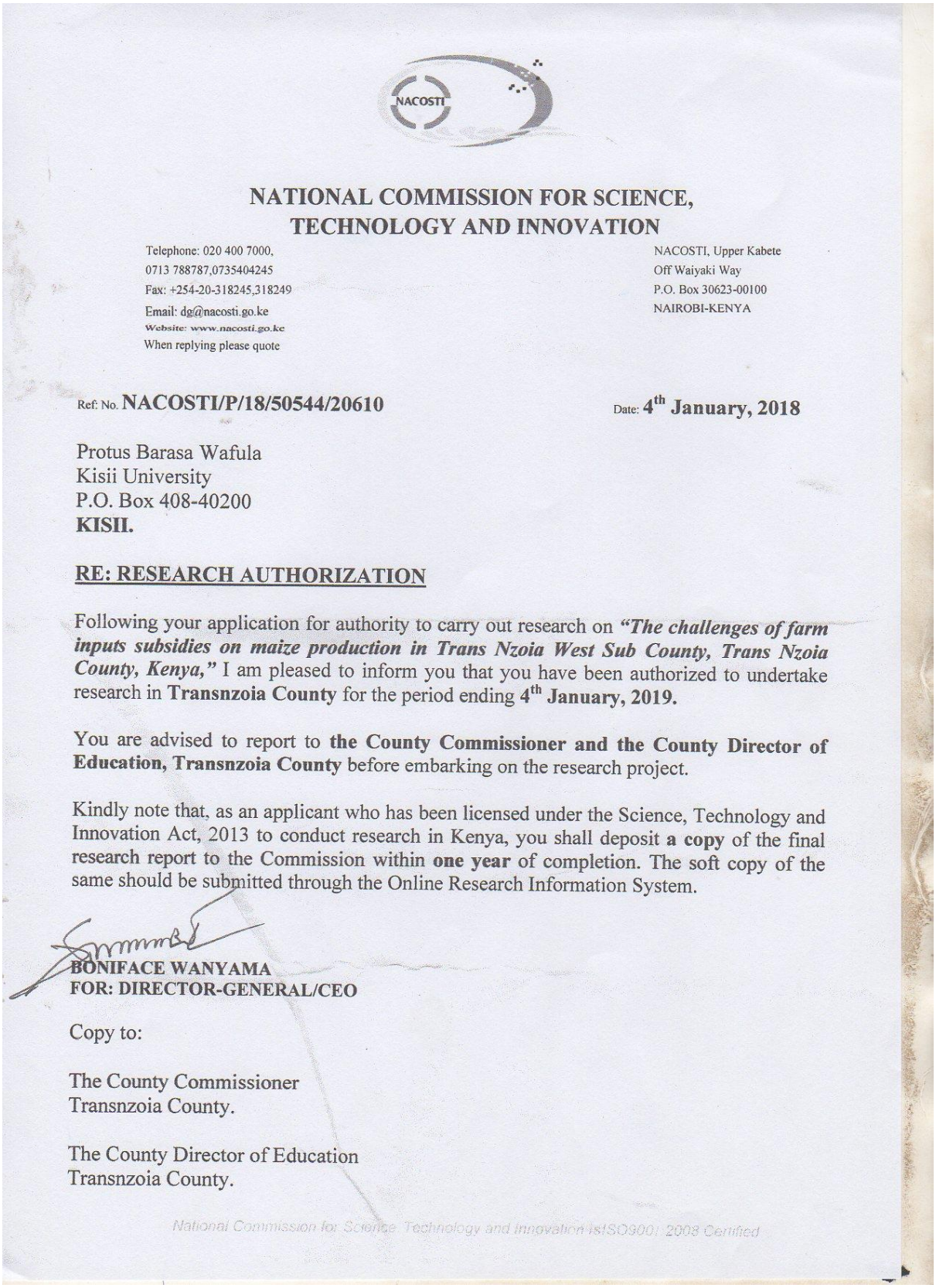
Prof. Anakalo Shitandi, PhD
Registrar, Research and Extension

Cc: DVC (ASA)
Registrar (AA)
Director SPGS

AS/mm

KISII UNIVERSITY IS ISO 9001:2008 CERTIFIED

APPENDIX F: RESEARCHauthorization



NACOSTI

NATIONAL COMMISSION FOR SCIENCE, TECHNOLOGY AND INNOVATION

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0713 788787,0735404245
Fax: +254-20-318245,318249
Email: dg@nacosti.go.ke
Website: www.nacosti.go.ke
When replying please quote

NACOSTI, Upper Kabete
Off Waiyaki Way
P.O. Box 30623-00100
NAIROBI-KENYA

Ref: No. **NACOSTI/P/18/50544/20610**

Date: **4th January, 2018**

Protus Barasa Wafula
Kisii University
P.O. Box 408-40200
KISII.

RE: RESEARCH AUTHORIZATION

Following your application for authority to carry out research on ***"The challenges of farm inputs subsidies on maize production in Trans Nzoia West Sub County, Trans Nzoia County, Kenya,"*** I am pleased to inform you that you have been authorized to undertake research in **Transnzoia County** for the period ending **4th January, 2019.**

You are advised to report to **the County Commissioner and the County Director of Education, Transnzoia County** before embarking on the research project.

Kindly note that, as an applicant who has been licensed under the Science, Technology and Innovation Act, 2013 to conduct research in Kenya, you shall deposit **a copy** of the final research report to the Commission within **one year** of completion. The soft copy of the same should be submitted through the Online Research Information System.

BONIFACE WANYAMA
FOR: DIRECTOR-GENERAL/CEO

Copy to:

The County Commissioner
Transnzoia County.

The County Director of Education
Transnzoia County.

National Commission for Science, Technology and Innovation is ISO9001: 2008 Certified

APPENDIX G: RESEARCH PERMIT

THIS IS TO CERTIFY THAT:
MR. PROTUS BARASA WAFULA
of KISII UNIVERSITY, 1477-30200
KITALE,has been permitted to conduct
research in *Transnzoia County*

on the topic: *THE CHALLENGES OF FARM INPUTS SUBSIDIES ON MAIZE PRODUCTION IN TRANS NZOIA WEST SUB COUNTY, TRANS NZOIA COUNTY, KENYA*

for the period ending:
4th January,2019

.....
Applicant's Signature

Permit No : NACOSTI/P/18/50544/20610
Date Of Issue : 4th January,2018
Fee Recieved :Ksh 1000

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

CONDITIONS

1. The License is valid for the proposed research, research site specified period.
2. Both the License and any rights thereunder are non-transferable.
3. Upon request of the Commission, the Licensee shall submit a progress report.
4. The Licensee shall report to the County Director of Education and County Governor in the area of research before commencement of the research.
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REPUBLIC OF KENYA

National Commission for Science, Technology and Innovation

RESEARCH CLEARANCE PERMIT

Serial No.A 17042

CONDITIONS: see back page

APPENDIX H: MINISTRY OF EDUCATION

MINISTRY OF EDUCATION
State Department of Basic Education

Telegrams: .....
Telephone: Kitale 054-31653 – 30200
Fax: 054-31109
Email: transnzoiacde@gmail.com
When replying please quote:

County Director of Education,
Trans Nzoia,
P.O. Box 2024 – 30200
KITALE.

Ref. No. TNZ/CNT/CDE/R.GEN/1/VOL.II/90

Date: **5th March, 2018**

TO WHOM IT MAY CONCERN

RE: RESEARCH AUTHORIZATION – PROTUS BARASA WAFULA

The above named has authority to carry out research on **"The challenges of farm inputs subsidies on maize production in Trans Nzoia West Sub County, Trans-Nzoia County" for** a period ending **4th January, 2019.**

This is therefore to authorize the person to collect data and/or carry out activities related to this particular exercise in Trans-Nzoia County. Whoever may be concerned is requested to co-operate and assist accordingly.

Thank you.

COUNTY DIRECTOR OF EDUCATION TRANS-NZOIA, KITALE P.O. Box 2024-30200, Tel: 020-2640448

PP **DIXON O. OGONYA**
COUNTY DIRECTOR OF EDUCATION
TRANS-NZOIA

APPENDIX I: COUNTY COMMISSIONER

THE PRESIDENCY

Telephone: 054 – 30020
Fax No: 054 – **30030**

MINISTRY OF INTERIOR
AND
COORDINATION OF
NATIONAL GOVERNMENT

COUNTY COMMISSIONER'S OFFICE
TRANS NZOIA COUNTY
P.O BOX 11 - 30200
KITALE

E-mail: cctransnzoiacounty@yahoo.com
When replying please quote

TNZC/CONF/ED.12/1/VOL.II /270

5th March, 2018

TO WHOM IT MAY CONCERN

RESEARCH AUTHORIZATION

This is to inform you that **Protus Barasa Wafula** of **Kisii University** has been authorized by National Commission for Science, Technology and Innovation to carry out research on **"The challenges of farm inputs subsidies on Maize production" in Trans Nzoia West Sub County, Trans Nzoia County** for the period ending **4th January, 2019.**

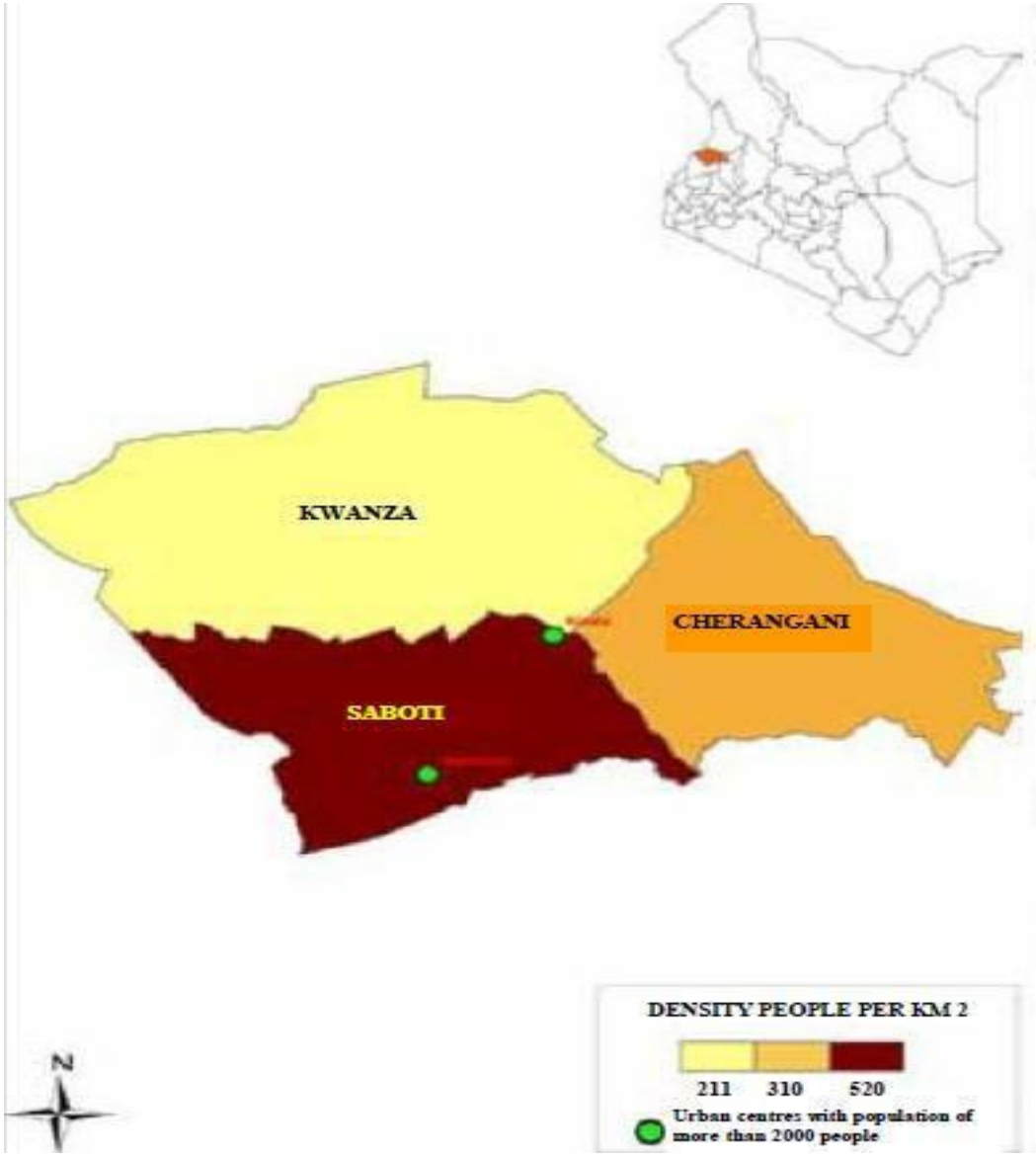
Kindly accord him the necessary assistance that he may require.

COUNTY COMMISSIONER
TRANS-NZOIA COUNTY
P. O. Box 11 - 30200 KITALE

IRENE NDUNDA
FOR: COUNTY COMMISSIONER
TRANS NZOIA COUNTY

APPENDIX J: MAP OF TRANS- NZOIA COUNTY

APPENDIX K: MAP OF TRANS- NZOIA WEST SUBCOUNTY



APPENDIX L: PHOTOGRAPH SHOWING ONE ACRE PLOT

APPENDIX M: PHOTOGRAPH SHOWING THE RESEARCHER AND A FARMER

APPENDIX N: PUBLICATION

ISSN: 2636-6282
Volume 1, Issue 6, October-2018: 57-66

IJCIAR

International Journal of Current Innovations in Advanced Research

Influence of Type of Farm Input Subsidies on Maize Production in Trans Nzoia West Sub County, Trans Nzoia County, Kenya

Barasa Protus Wafula, Dr. Daniel Nyantika, Dr. Tom George Ekisa and Dr. Mamboleo Denis Mabaya

Degree of Master of Arts in Geography Department of Geography, Faculty of Arts and Social Sciences. Kisii University P. O Box 408-10200 Kisii

Abstract: Food security all over the world is the biggest challenge affecting humanity; the problem is even more serious among the low-income and food shortage nations. In order to achieve reasonably high food produce to deal with this situation, sustainable strategies are required. One of such strategies is what this Study wished to address. Hence, the Study made an endeavour to find out the challenges of farm inputs subsidies on maize production in Trans Nzoia West Sub County, Trans- Nzoia County, Kenya. The study was of significance to stakeholders in the Agriculture sector ranging from The National Ministry of Agriculture and the County; agricultural staff implementing the project and the farmers. The study was based on Social Protection Theory. A descriptive survey design was used since the study was both qualitative and quantitative in nature. A sample of 160 was selected from a target population of 1510 for data collection. Questionnaire and an interview schedule were used as tools of primary data collection. Data instruments were pretested in Trans-Nzoia East Sub County to test their reliability and viability. Data was collected, coded and analyzed using Statistical Package for Social Sciences (SPSS) version 20.0 findings showed that there was a significant effect of subsidized seed given that majority of the farmers produced bags using certified seed. It was recommended that the government should appojnt distribution points where input subsidies should be channeled through location Agriculture Officers' rather than the National Cereals and Produce Board.

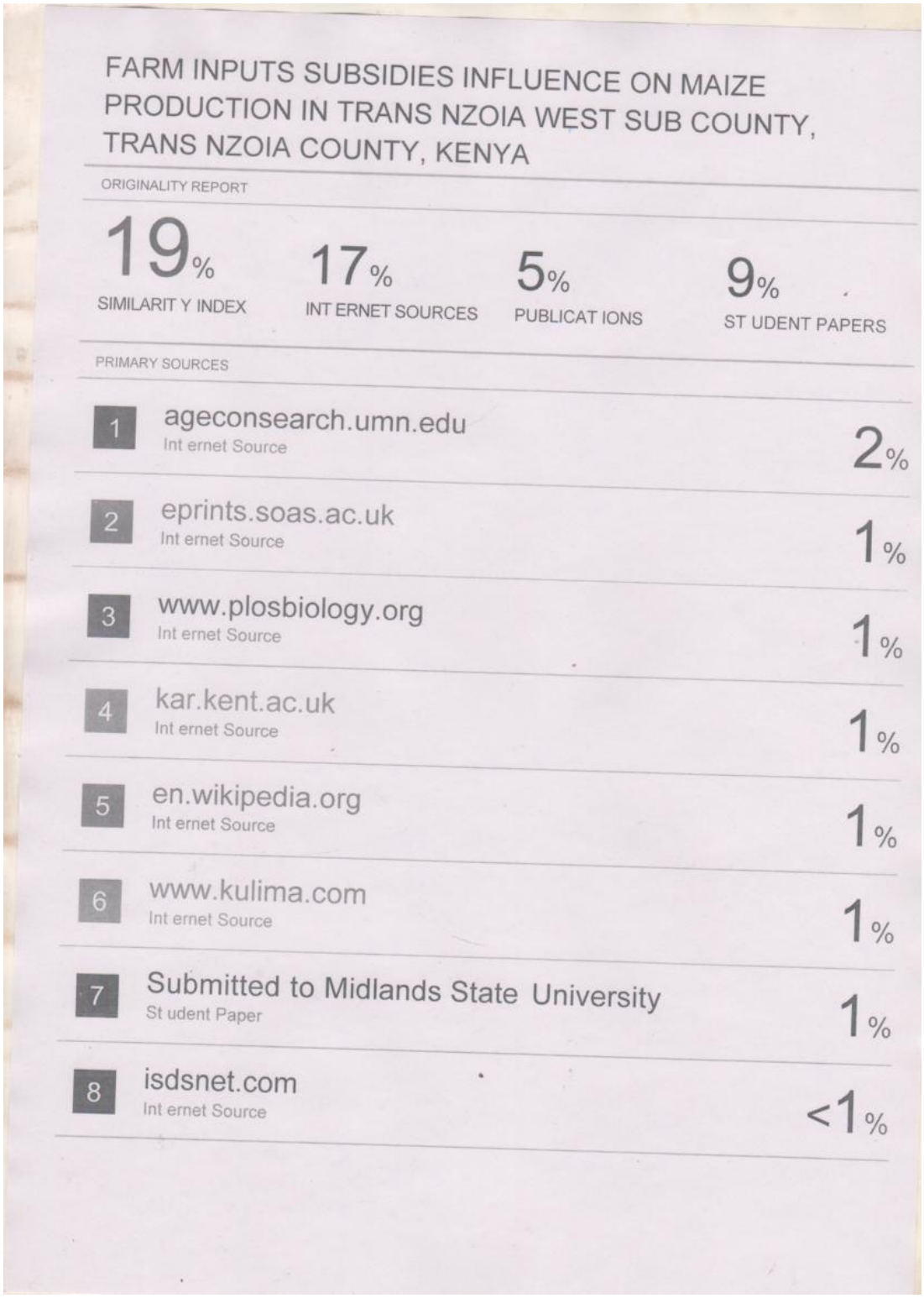
Keywords: Farm subsidies, free inputs, Incentives.

Cite this article as: Barasa Protus Wafula, Daniel Nyantika, Tom George Ekisa and Mamboleo Denis Mabaya. **2018.** Influence of Type of Farm Input Subsidies on Maize Production in Trans Nzoia West Sub County, Trans Nzoia County, Kenya. Int. J. Curr. Innov. Adv. Res., **1(6): 57-66.**

Introduction

Many nations have made efforts to fight poverty through making radical changes in the lifestyles and more importantly in agricultural sectors and recognizing the immense variations needed to revamp farm production. The intensive use of farm subsidies has a long history of use in the world. According to Duvauchelle (2012), majority of farm and agricultural subsidy programmes started in the late 1960s and 1970s, even though some countries invested in agricultural subsidies as early as in 20th century. a case in mind are countries like United states of America who started subsidizing farm input subsidies as early

APPENDIX O: PLAGIARISM REPORT



FARM INPUTS SUBSIDIES INFLUENCE ON MAIZE PRODUCTION IN TRANS NZOIA WEST SUB COUNTY, TRANS NZOIA COUNTY, KENYA

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