

**INFLUENCE OF FARM SUBSIDY ON SUSTAINABLE MAIZE
PRODUCTION IN TRANSMARA WEST DISTRICT, NAROK
COUNTY**

BY

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DECLARATION

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

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DEDICATION

All dedications are to my only and beloved wife Lucy Nduku and my lovely children Esther Mwende, Manasseh Mwendwa and Joy Munee not to forget my parents Edward Muendo and Elizabeth Munee for the sacrifice they gave to bring me up and patiently educate me. May God who knows how to reward people of good deeds bless them.

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ABBREVIATIONS

DAO	District Agricultural Officer
DCDO	District Crops Development Officer
DFID	Department of International Development
DPMEO	District Project Monitoring and Evaluation Officer
FAO	Food and Agricultural Organization
IFDC	International Fertilizer Development Centre
IFRI	International Food policy Research institute
Kgs	Kilograms
Kilimo Plus	A 50kilograms bag of Basal fertilizer, 50 kilograms of topdressing fertilizer and 10 kilograms of seed maize.
MOA	Ministry of Agriculture
NAAIAP	National Accelerated Agriculture inputs access Programme
NEPAD	New Partnership for African Development
UN	United Nations
SSA	Sub-Saharan Africa
SPS	Starter Pack Scheme
TIP	Targeted Input Programme
SAP	Structural Adjustment Programme
PDA	Provincial Director of Agriculture

ABSTRACT

This report is on influence of farm subsidy on sustainable maize production in Transmara West District, Narok County. The study was warranted by the continued food deficit in the world where around 925 million out of the total 6.8 billion people in the world are food insecure, 13.1 percent, or almost 1 in 7 people are hungry. From the literature reviewed it was found out that Maize the staple food for many Kenyans has been in the decline over the years. The country suffers a maize deficit of 6.8 million bags (612,000 metric tons). Maize imports cost the country between USD192 and USD 487 per year if imported from Africa and elsewhere respectively. The use of agricultural inputs is fundamental in modern agriculture in developed countries, and they were a primary ingredient in the green revolution that swept through Asia and Latin America during the '60s and '70s. However, the green revolution largely by-passed many African countries, and the use of agricultural inputs remains very low. While agricultural production and productivity soared in Asia and Latin America during the last four decades, they have largely stagnated in Africa, resulting in a rising dependency on imported grains and an increase in the number of food insecure people. Several efforts have been employed in developing the food security, scenario key among which was the use of farm subsidies in various ways with differing results. In Kenya National Accelerated Inputs Access programme was started in 2007 and Transmara West district was chosen. Though not a net food deficit district it was intended to boost its production especially from the poor and the vulnerable farmers who were not using the inputs or using the inputs inadequately. The study therefore was to establish to what extent these farm subsidies have been able to influence maize production in Transmara west district over the four years after it was advanced to the 1500 farmers. A descriptive survey design was chosen since it was found fitting and cost effective for the researcher. A total of 150 farmers were interviewed using a questionnaire. The farmers were stratified into males, females, and youth farmers after which using random sampling technique 10% was chosen. All the 7 agricultural officers participating in the National Accelerated Agriculture Inputs Access programme were chosen using purposive sampling giving a total of 157 respondents. A questionnaire was used to interview the farmers while an interview guide was used for the officers. A pretest was done in Transmara East District of the instruments to test their reliability and viability. seven agricultural officers were be selected using purposive sampling one from the district and one from each division for data triangulation on overall change in food production in the District. Data was collected, coded, and analyzed using Statistical Package for Social Sciences (SPSS) version 11.5 computer software. Descriptive statistics was used to give the outputs. Conclusions and recommendations were made on if farm subsidy has had influence on sustainable food production in Transmara West District. It was found out that despite the government putting lots of effort to provide farm subsidy considerations need to be made in relation to the timeliness, administrative costs, amount, quality and type of farm inputs being given to achieve sustainable food security in Transmara West and Kenya in general. Further recommendations for research were made to the ministry of agriculture to review the modalities of giving farm subsidy to address maize deficit in the country.

CHAPTER ONE

INTRODUCTION

1.1 Background of the study

Achieving food security in its totality continues to be a challenge not only for the developing nations, but also for the developed world. The difference lies in the magnitude of the problem in terms of its severity and proportion of the population affected. In developed nations the problem is alleviated by providing targeted food security interventions, including food aid in the form of direct food relief, food stamps, or indirectly through subsidized food production. These efforts have significantly reduced food insecurity in these regions. Similar approaches are employed in developing countries but with less success (IFPRI, 2002).

The root cause of food insecurity in developing countries is the inability of people to gain access to food due to poverty. While the rest of the world has made significant progress towards poverty alleviation, Africa, in particular Sub-Saharan Africa(SSA), continues to lag behind. Projections show that there will be an increase in this tendency unless preventive measures are taken. Many factors have contributed to this tendency including the high prevalence of HIV/AIDS, civil war, strife and poor governance, frequent drought and famine and agricultural

How then can Africa achieve food security? The solution lies in increasing food availability, food access and food adequacy for all. Because the food insecurity in Africa is directly correlated with poverty, it is necessary to not only alleviate poverty but also create wealth for the target population (Pinstrup-Aderesen, 2002).

Recent years have seen a resurgent interest in large scale input subsidies, and particularly fertilizer subsidies in agricultural development and food security policies in Africa. Very high global grain prices in the first part of 2008 appeared to make such subsidies even more attractive, but this was complicated by even more dramatic rises in fertilizer

prices. While global grain and fertilizer prices have subsequently fallen back, high grain prices have persisted in many domestic markets, and future food and fertilizer prices are very uncertain.

The Washington consensus and then the Post Washington consensus on agriculture recognized the substantial success of the green revolution in Asian countries in driving growth and poverty and reduction but, implicitly or explicitly, considered this to have been achieved, rather than assisted by, input subsidies (and other subsidized services) (IFPRI, 2002). This position was taken despite long standing work showing the importance of subsidies in Indonesia, for example, in promoting agricultural growth in precisely the types of situations where the analysis presented earlier suggests that such subsidies might have the greatest effect (food staples in large countries, with high physical returns from input use) (Timmer, 2004). In a review of green revolution experience in Asia it is argued that sustained (but not indefinite) input subsidies were a major part of successful Green revolution packages, making a critical contribution to thickening and thus ‘kick starting markets’ first within staple food supply chains and then in the wider rural economy (Dorward et al ,2004). It is also argued that input subsidies were a critical element within green revolution policies, drawing on detailed policies reviews across a range of Asian countries.(Djurfeldt et al ,2005). Empirical evidence was provided on the contribution of input subsidies to growth and poverty reduction in India in the early stages of the green revolution but not later (Fan et al, 2007). This confirms an important point made by Dorward, that later ineffectiveness and inefficiencies of input subsidies should not obscure their initial contribution in driving growth forward, (Dorward et al (2004).

Much of the Washington consensus pessimism regarding input subsidies was founded on later inefficiency of Asian subsidies and African experience of such subsidies. The Berg report criticized input subsidies as a major element in fiscally and economically unsustainable policies that were highly inefficient, ineffective and expensive in Africa. These policies

distorted market incentives, blunted competitiveness and farmer incentives, and undermined the growth of private sector services. In this, subsidized input systems may have looked good for farmers (as regards services that were supposed to be provided), but the theoretical difficulties were compounded by diversion and inefficiency such that actual benefits to farmers were often very limited (World Bank, 1981). It should be noted, however, that there are countries that implemented input subsidy systems that had initial success in raising productivity but for varying political and economic reasons failed to sustain the fiscal investment and market systems necessary for sustained benefits (for example Zimbabwe and Malawi). Many African countries, including Kenya, Tanzania, Malawi, Zimbabwe and Zambia pursued large scale “universal” subsidy programmes from the 1960’s up through the 1980’s (Dorward, 2009). These programmes were characterized by a government-controlled input (and output) marketing system, in which farmers were supplied with agricultural inputs at controlled and subsidized prices, and often on heavily subsidized credit. The experiences under these programmes were mixed. The programmes succeeded in raising input use by farmers and increasing agricultural productivity in many cases. However, they were extremely expensive, most subsidies tended to benefit relatively well-off and better connected farmers, and the advances in agricultural productivity were dependent on continued government support. Further, the fertilizer subsidy programmes were prone to inefficiencies arising from high administrative costs, government monopolies and political manipulation (Banful, 2010b). As the subsidy programmes were dismantled and input markets liberalized as a part of the structural adjustment process in the 1980’s and 1990’s, input use and agricultural productivity declined (Crawford et al, 2006). After a period of liberalized input markets by the end of the last century, new subsidy programmes began to emerge in several African countries. The Malawian government pioneered the return to large scale subsidies in 1998, when it began distributing free fertilizer to farmers (Banful, 2010). Other countries, such as Nigeria, Zambia, Tanzania, Kenya, Ghana soon followed Malawi’s example. In 2006,

Abuja, Nigeria, hosted the Africa Fertilizer Summit under the auspices of the African Union (AU), the New Partnership for African Development (NEPAD) and the Government of Nigeria (Crawford et al, 2006). An important output of that summit was the Abuja Declaration on Fertilizer for African Green Revolution, in which AU member states set out to increase fertilizer intensity to an average of 50 kg/ha by 2015. One of the instruments in a five point action plan was to implement smart subsidy programmes to improve access to fertilizers for small-holder farmers. Smart subsidy programmes are meant to address the shortcomings of the universal subsidies. To be “smart”, subsidy programmes should adhere to a number of design principles, target specific farmers, provide market based solutions and have a clear exit strategy (Minde et al, 2008).

In 2007, the Kenya government decided to embark upon a National Accelerated Agricultural Input Programme (NAAIAP) to promote food security, agricultural input use, input market development, and agricultural productivity. Initially planned to subsidize fertilizers and maize seed for a limited number of districts, it has subsequently been expanded to national coverage with plans to provide 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 would also be eligible for trade credit guarantees. Farmers will also benefit from linked extension, cereal banks, warehouse receipts, and participation in farmer groups (Sikobe, 2008).

This study therefore sought to establish the contribution of NAAIAP farm subsidy programme to increased maize production and hence better livelihoods for the people of Transmara West district. The knowledge gaps identified have been documented and given to the relevant stakeholders to improve the efficiency and effectiveness of the programme in the Sub County and the country at large.

1.2 Statement of the problem

Maize the staple food for many Kenyans has been in the decline over the years. The country suffers a maize deficit of 6.8 million bags (612,000 metric tons). Maize imports cost the country between USD192 and USD 487 per year if imported from Africa and elsewhere respectively. Several efforts have been employed by international agencies and even the Kenyan Government in the country to reverse the trend. Free farm inputs have been one of the interventions employed by the Ministry Of Agriculture in various districts through NAAIAP. 165 districts in the country are participating in the programme aimed at providing 2.25 million bags per year (MOA, 2011).

Despite the farm subsidy running in the country from 2007, the over 4 million bags maize deficit gap has not been closed. This scenario called for an in depth study to find out the relationship between the farm subsidy and maize production in the Maize subsector in Transmara West district.

1.3 Purpose of the Study.

The purpose of the study was to investigate influence of provision of farm subsidy on sustainable maize production in Transmara West, Narok County.

1.4. Objectives of the study

The researcher came up with five areas which the study was based on as follows:-

1. To investigate the extent to which timeliness in release of farm subsidy to farmers influence sustainable maize production in Transmara West district.
2. To establish how the administration (storage and transport) costs of the farm subsidy influence sustainable maize production in Transmara West district.
3. To investigate the influence of the amount of farm subsidy disbursed on sustainable maize production in Transmara West district.

4. To determine how the quality of the farm subsidy given influence sustainable maize production in Transmara West district.
5. To assess how the type of farm subsidy supplied influence sustainable maize production in Transmara west district.

1.5 Research questions

Five research questions were developed and adopted for the study as shown below:-

1. To what extend does timeliness in release of farm subsidy to farmers influence sustainable maize production in Transmara West district?
2. What is the influence of the administration (storage and transportation) costs of farm subsidy on the production of sustainable maize production in Transmara West district?
3. How does the amount of farm subsidy disbursed to farmers influence sustainable maize production in Transmara west district?
4. To what extent does the quality of farm subsidy influence sustainable maize production in Transmara West district?
5. What relationship exists between the type of the farm subsidy given and sustainable maize production in Transmara West district?

1.6. Significance of the study

This study was designed to investigate the influence of farm subsidy given to farmers by the Ministry of Agriculture on sustainable maize production in Transmara West district. It is hoped that the findings from the study would be useful to the Ministry of Agriculture staff implementing the project both in the district and at national level and farmers in Transmara

West District in understanding the proper time of disbursing the free inputs, the proper type of farm inputs and the importance of proper quality of inputs to be disbursed.

1.7 Limitations of the study

This study sought to investigate the extent to which farm subsidy program influence sustainable food security. Though the government has been running other social protection programmes in the same district, the study focused only on one thousand five hundred farmers who received farm subsidy support through the NAAIAP commonly called Kilimo plus in 2008/2009 financial year of the government of Kenya.

The farm subsidy program covers over three out of the four districts in Narok County. Due to time and financial limitations the study only focused on Transmara West District. Stratification was be done for the sample into male adult farmers, female adult farmers and Young warriors (male and female farmers below thirty five years of age) in order to reduce sampling error and increase accuracy.

Low literacy levels and poor record keeping were issues during data collection. The researcher relied mainly on spoken responses. This may have affected the accuracy of the data captured especially for the maize yields from the beneficiaries of the government farm subsidy. However great care was taken to triangulate the data through interviewing the ministry of agriculture staff in the various divisions to ascertain the information.

1.8 Delimitations of the study.

This study was conducted in five divisions in Transmara West District. The research was be conducted among the Maize farmers who have benefited in the free inputs programme in the last 4 years and the ministry of agriculture staff both in the district and in the field stations. The research was interested in farmers who benefited since they are well placed to allow him make good comparison before and after getting the free inputs. The Ministry of

agriculture staff in Transmara West district were key informants since they are mainly the custodians of most of the maize production statistics in the district. The study was limited to amount of maize produced in one acre piece of land.

1.8 Scope of the study

This study was conducted in five divisions in Transmara West District, among the maize farmers who benefited from the free inputs program only.

1.9 Basic assumptions of the study

The study was based on the following assumptions:

- I. That the farmers were receiving the same amount of rainfall in the whole district so that the water availability will not create variation.
- II. That the other agronomic practices were conducted as required so that influence of poor agronomic practices will not create a variation.
- III. It is hoped that the sampled farms were having the same soil fertility such that the fertilizer applied creates the same increase in the fertility levels.
- IV. That the seed variety supplied is suitable for the farms to avoid disparities due to altitude changes and effects on the production potential of some maize seeds.

1.10 Definition of Significant Terms as used in the Study

This project report has embraced some terms which are significant to suit the study as follows:-

Farm subsidies: - sometimes noted as agricultural subsidies, refers to all mineral fertilizers and certified seed given free by the Ministry of Agriculture to maize farmers for increasing their maize yields. This is meant to make them food secure and have

surplus for the market. It was assumed that they used the proceeds to purchase farm inputs for the following years after seeing the benefit that year. Farm subsidies often deal with farmers growing produce such as grains, although farm subsidies can be applied as a government sees fit.

Food security:- is said to exist when people have access to sufficient amounts of safe and nutritious food, and therefore are consuming enough for an active and healthy life. This may be due to the availability of food, adequate purchasing power, or appropriate utilization at household level. In this study, food security is used to refer to the state where the household has enough maize to cater for its needs for the year up to next harvest and even have some for sale to meet other household needs even acquiring farm inputs for the next season.

Sustainable food security: - is used here to mean food security over the years not just one year after the subsidy has been given.

Inputs: - In the context of these proposals inputs will refer to the fertilizers and seeds given to the farmers.

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

Vulnerable farmers: - mainly maize farmers who are relatively poor and unable to purchase inputs though they own a piece of land.

Criteria of disbursement: - these are contextually used to refer to the conditions employed to select the farmer beneficiaries. These conditions included being able to own at least 0.4 Ha of land, poor and vulnerable and willing to join a group for joint training and marketing of the maize produced.

Time of issuing: - These will refer to the time of giving out the inputs to the farmers

Level of funding: - the amounts of money available to enable the government purchase the inputs.

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

1.11 Organization of the study.

The study was organized into five chapters; chapter one is introduction which contains the background of the study, statement of the problem, purpose, objectives, research questions, significance, limitations, delimitations, scope, and basic assumptions of the study. Definition of terms used in the study and organization of the study form the final item in this chapter.

Chapter two is literature review comprising of earlier scholars writing on timeliness, administration, amount quality and type of farm affect food security which is finalized by the theoretical and conceptual framework for the study.

Chapter three finally deals with the research design and methodology where introduction, research design, target population, sample size and sampling procedure, research instruments, data collection procedures, data analysis techniques and finally ethical considerations.

Chapter four contains data analysis, presentation and interpretation. It contains background information of the farmers and Agricultural officers interviewed, findings on influence of timeliness of inputs and food security, Influence of administrative costs of farm subsidy on food security, influence amount, quality and type of farm inputs on food security in Transmara West district. Discursions on the findings close the chapter.

Chapter five provides a summary of the findings, conclusions and recommendations. It also contains suggestions for further research on the subject. Appendices are attached at the end.

CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

In this chapter, an attempt has been made to review past and current literature of renowned scholars in the development of studies on farm subsidy. It therefore provides in-depth findings from earlier scholars in the areas of timeliness in the release of farm inputs, the administration (transportation and storage) of farm inputs, the amount disbursed and the type of farm inputs on how they influence food production in Transmara West district. The literature review clearly justify why the study was carried.

Farm subsidies have a widespread history of use around the world. Most farm and agricultural subsidy programs began in the late 1960s and 1970s, although some countries began subsidizing some agricultural products in the early 1900s (Duvauchelle, 2012). For example, the U.S. began subsidizing farms in 1933 through the Agricultural Adjustment Act and its successor, the U.S. Agricultural Act of 1949. Farm subsidies are often in flux, and countries may favor them at some times while dropping them at others. For example, New Zealand supported heavy farm subsidies until 1984, when its government dropped a large percentage of them (Duvauchelle, 2012). Modern intensive agriculture depends heavily on timeliness of the farming operation for enhanced crop yields and profits. (Khan, 2011).

Available information indicates that subsidy rates globally have been very high at 75-85 percent during late 1970s to mid 1980s, before falling to less than 60 percent in the mid-1990s. Other production inputs, such as improved seeds (50 percent subsidy rate), agro-chemicals (50 percent), and tractor services (25 to 50 percent) also received governmental support. However, inefficiencies and lack of timeliness in the distribution system frequently undermined the programs and further raised their costs (Walkenhorst, 2007).

2.2.1 Overview of Sustainable Maize Production

Food security is perhaps the greatest challenge facing the world community. The challenge is most critical in low-income, food-deficit countries. Achieving sustainable increases in food production in these, and other, developing nations requires strategies that address four key

dimensions of sustainable agriculture and rural development namely people, institutions, knowledge and environment (FAO, 2002). 925 million people (13.6 percent) of the estimated world population of 6.8 billion are undernourished most of whom are in developing countries (FAO, 2010). Maize the staple food for many Kenyans has been in the decline over the years. The country suffers a maize deficit of 6.8 million bags (612,000 metric tons) on average every year.

2.2.2 Timeliness of inputs and sustainable maize production

In a report on the proposed reforms of the Zambian subsidy programme it was found that, when farmers have the right Agricultural Extension knowledge, timeliness is the next criterion for the successful delivery of such inputs to target farmers. Timeliness is particularly important crop production and farmer decision making are dependent on capricious monsoon rains. The more complex the technological package and the greater the number of off-farm inputs required, the more dependent the farmer becomes on the efficiency of input delivery services. The problems arising from the failure of one part of an interrelated agricultural service/production system were also illustrated in Paraguay, where farmers reported that failure of institutional lenders to process credit applications promptly often prevented the use of improved inputs on a timely basis, rendering the inputs virtually useless. Adequate and timely credit is not given and there are undue delays in dispensation of credit. Simplification of procedures/ process of documentation, flexible security norms, timeliness and adequacy of credit, delivery of credit and recovery within easy reach, increased transaction hours and comfort level in dealings are important factors for expanding the coverage of institutional credit. Cumbersome & time consuming loan procedures and levying of stamp duty on loans for agriculture & allied activities is impeding farmers' access to bank credit (Solem et al, 1985).

While there is no immediate substitute for inorganic fertilizer, there may be scope to improve the efficiency of fertilizer use. Delayed access to seed and fertilizer is a recurring complaint of farmers in Malawi and elsewhere in Africa. The timing of fertilizer application can be improved as delayed application can sharply reduce uptake efficiency. This requires: early tendering, and contract signing by May each year; coupons to be distributed by early August; fertilizer and seed to be distributed by end of September; and stocks in the field to be replenished ahead of timely application (Denning et al, 2009).

Delays in the release of funds by the Ministry of Finance and National Planning, Malawi and the prolonged tendering process have led to delayed payments to input suppliers

and service providers under the Fertilizer Subsidy Programme (FSP). Furthermore, the annual contracts for the supply of inputs under the FSP do not provide incentives for investment and availability of inputs all year round. The suppliers of fertilizer are unable to make long term plans to supply fertilizer in rural areas because of uncertainty (Denning et al, 2009).

The planting season is a very important period for the farmer; any decision made at this time determines the amount of harvest a farmer will get at the end of the year. Timeliness in planting is a very important aspect of farming. Any delays in planting can cause great losses in both yield and income. One of the causes of delayed planting is lack of early preparation – early planting therefore calls for proper planning. Planning involves making timely decisions on required inputs (icipe, 2008). The timeliness in planting affects maize yield and may lead to heavy pest and disease infestation (MOA, 2006).

In 2006 the Ministry of agriculture began National Accelerated Agriculture Inputs Access Programme NAAIAP a farm subsidy programme in Kenya where Transmara West district was included. This is a voucher based program aimed at achieving sustainable food security. Its primary objective is to improve access and affordability of the key inputs for the millions of small scale farmers, particularly those below absolute poverty so that they can get out of the vicious cycle of poverty and participate in agriculture as a business enterprise. The programme has disbursed more than Kenya shillings 4120 million (NAAIAP, 2009). This study therefore was to find out the influence of the timeliness of issuing the farm inputs on maize production in the district.

2.2.3 Administrative costs of farm subsidy and sustainable maize production

A World Bank synthesis of lessons learned from earlier efforts to promote fertilizer use on the continent attributed this failure to high and unsustainable fiscal and administrative costs, governments' weak capacity to implement programs, and governments' inability to take account of the diversity of production systems and farmers' needs (Denning et al, 2009). In Malawi a number of operational challenges have been identified and are being addressed by the government in redesigning the program. These included: delays in program design and implementation leading to delayed delivery of inputs in some areas, cumbersome coupon processing and redemption systems, the need to improve program information sharing with the intended beneficiaries and general public, shortages of fertilizers and mismatch of coupons and fertilizer types in some areas (Dorward et al, 2008).

In Asia, Djurfeldt, 2005 clearly showed that, poor infrastructure and related high transport costs for farm inputs, inadequate institutional support (credit and extension),

political instability, diverse agro-ecological complexities, low fertilizer use, and the limited availability of suitable high-yielding varieties have all contributed to low agricultural productivity growth and therefore food insecurity.

Due to poorly developed infrastructure, the costs of transporting inputs to remote areas, particularly in landlocked countries, are very high. Banful (2010), suggests that around 50 percent of market fertilizer prices across SSA can be attributed to transaction costs compared with e.g. 20 percent in Thailand. If farmer density is also low, the potential demand for expensive agricultural inputs may be so low that agro-dealers will find it hard to cover the costs of setting up a shop. Coupled with relatively low agricultural productivity, the investment could simply be unprofitable, demand for inputs may not exist, and suppliers will be unwilling to offer access to inputs. In such a case, input subsidies could boost demand and encourage input suppliers to expand their presence to remote areas. However, the subsidies would be inefficient. Some of the costs of supply would shift from farmers to the state, but the costs would still outweigh the economic benefits. Funding for subsidies could be better spent on policies aimed at lowering the transaction costs, such as infrastructure investments and market deregulation.

In a report on how to improve the fertilizer subsidy programme it was recommended among other things : reduction of administrative burden and costs, thereby reducing direct government involvement in inputs procurement/importation and in-country distribution; Stimulate market competitiveness and in turn encourage the development of a private sector led agro-dealer (stockists) inputs supply networks in agricultural areas and encourage private sector participation in agricultural inputs importation, manufacturing and in-country distribution, amongst other attendant benefits of a well functioning voucher based inputs distribution system (mbozi, 2009).

In a study done in western Kenya, Chianu et al (2008) shows that although the number of agro-inputs dealers in Western Kenya has been growing, the growth is still a far cry from what is required to ensure that smallholder farmers, especially those in far away rural communities, have adequate access to agro-inputs. Besides, apart from limited business incentives, most of the agro-input dealers in the area face numerous other problems (e.g., infrastructural challenges, low demand) in their businesses that hamper efficient agro-input supply to smallholder rural farm households. Most of the agro-input dealers still travel long distances to source different agro-inputs – a situation that has continued to result in high farm-level (or farm gate) prices for farm inputs.

According to the District Agricultural Officers report of 2011 poor roads Transmara west is a big challenge to agriculture both in transporting inputs and outputs to and from the farms.

The roads are totally impassable during the rainy season and many transporters unwilling to do business in the poor roads due to high wear and tear costs and when they do it, it's at a very high cost. This cost is finally transferred to the farmer through increased inputs costs. The study therefore came in handy in establishing the influence of the administrative costs of farm inputs influence on maize production in the district.

2.2.4 Amount of farm subsidy received and sustainable maize production

By the turn of the century, 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, 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 2005–2006 season had good rains, and total maize production was more than double the 2004–2005 harvest, producing a surplus of 510,000 tons above the national maize requirement. Maize yields averaged 1.59 t/ha, doubling the 0.76 t/ha of the drought-affected 2004–2005 season. Incremental maize production attributed to the fertilizer subsidy was estimated at 300,000 to 400,000 tons.

Credit policies and procedures must be appropriate to the small farmer. Loans should be made to farmers only for products and technologies that have been proven. If experimentation is necessary, the risks should be assumed by entities more able to afford them. The rationale for assuming that agricultural credit activities will have a positive development impact is that greater credit availability should lead to higher rates of adoption of improved agricultural technology, if such technology is available. It is often hoped that this process may become self-financed as higher agricultural incomes lead to increased rates of rural savings. However, analyses of project experience and research results have shown that low interest rates and loan supervision have a weak effect on decisions to adopt new technology or make on-farm investments. Instead, in most of the cases reviewed, product and input prices have been much more important incentives to the use of new technologies. Thus, trying to improve agriculture through subsidized credit, particularly when other conditions are not favorable, is not likely to have a major effect. In addition, cheap credit policies are, in many cases, tied to low interest rates paid to potential savers in rural areas. Experiments in the use of flexible interest rates for rural savings programs have shown that the rural savings potential is much greater than is generally recognized. If, as mounting evidence suggests, rural savings behavior is highly sensitive to changes in real rates of interest, then cheap credit policies will hinder the growth of self-financing rural development because savers clearly cannot be paid more than the borrowers are paying to use the same funds. In the end, this

hindrance to the development of viable local financial institutions could be the most serious negative consequence of compensatory, subsidized credit policies. One element recognized in this new consensus on agricultural credit, and strongly confirmed by these project evaluations, is the very high transaction costs encountered by both lenders and participating borrowers in agricultural credit projects. These transaction costs are both financial and social. As Dorward (April 2009), points out, borrowing costs, especially for borrowers of small amounts, may be two or three times as much as nominal interest payments. These costs include waiting in line, transportation costs, bribes, legal and title fees, paperwork expenses, and time lost from work to deal with these demands. The total annual administrative cost of lending to small farmers may also amount to a percentage of the outstanding loan portfolio clearly exceeding the interest rate being charged.

The high transaction costs derive from the "supply-side" approach to agricultural credit taken by Aid for International Development(AID) traditional counterparts (generally public and mixed public/private institutions). There are two devastating 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. During the 1960s and 1970s, when AID sponsored many agricultural credit programs around the world, 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. Second, 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. (Solem at al,1985).

The Tanzania impact evaluation describes difficulties encountered by farmers caused by inefficiencies in TanSeed, the parastatal seed distribution company. An inefficient delivery system impeded 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).

Total governmental expenditure on agriculture at the federal, regional, and local level was assumed to amount to twice the spending of the Federal Government. Half of this amount was taken to benefit agricultural producers through production-related subsidies, such as fertilizer subsidies. That part of the budgetary support is allocated across commodities in proportion to the production value of the latter, while the rest is treated as non-product-specific assistance to farmers. (Walkenhorst, 2007)

The World Bank (2010) study also estimates the total costs of the Zambian Farm Subsidy programme(ZFSP), amounting to ZMK 183 billion, or USD 47 million, including direct costs of the inputs, administration and logistics, as well as the indirect costs of salaries paid to government staff in proportion to the resources spent on the programme and farmer contributions. These cost estimates imply that the increase in maize supply was made possible at a cost of around USD 325 per ton of maize at the farm gate. In comparison import prices fluctuated between USD 295 and USD 406 per ton during the period under investigation (2007- 2009). This shows an overall strong correlation between the amount of money used in purchasing inputs and the maize produced.

Each beneficiary household is entitled to pick up a package of agricultural inputs, consisting of sufficient amounts of fertilizers and hybrid seeds to cultivate one hectare of land using the dosage recommended by the government (Baltzer et al 2011). 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 district 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 Transmara West district.

2.2.5 Quality of farm subsidy and sustainable maize production

Quality of inputs being supplied by various agencies including the Society Certified seeds and fertilizer were often in short supply during the period when the farmers require it the most leaving the farmers to be exploited in the hands of the private traders. (Solem at al,1985). Growth of agriculture is critically determined by the use of modern inputs like fertilizers, seeds, plant propagation material, other agricultural chemicals and by the availability of credit to purchase these and other inputs. There is a need to ensure adequate and timely supply of all these inputs. Out of these, supply of seed needs urgent attention as quality of seed is the basic determinant of productivity. Most of our farmers do not distinguish between grain and seed, either because of ignorance or due to lack of ready availability of seed. Here is a need to revamp the seed production and distribution system by strengthening public sector seed agencies and by involving private trade in seed multiplication and distribution system. Quality checks on inputs are becoming more

important as the unscrupulous trade fleecing farmers by selling spurious seed, fertilizer and chemicals has been on the rise. (Government of India, 2007).

In Malawi and throughout Africa, there is debate about the relative merits of open pollinated varieties (OPVs) and hybrid varieties of maize. Smallholder maize production in Africa has traditionally been based on the use of OPVs, whereby the seed is retained from year to year. Over time, through farmer selection, these traditional OPVs, known as landraces, become well adapted to the particular farm environment. Improved OPVs have been bred and selected for special characteristics such as drought tolerance and disease resistance. Seed can be recycled by farmers for a maximum of three years without significant yield loss. OPVs typically yield 10%–25% less than hybrids (IRRI,2008). On his report on evaluation of Agricultural Inputs Support programme(AISP), Chinsinga (2011) argues that over the life time of the programme attention was shifted more and more towards hybrid seeds. Hybrid maize seeds generate higher yields than OPVs and are therefore more attractive for policy makers, who want to show fast results. However, NGOs argue that OPVs are more suitable for smallholders, as they are more resistant to pests and diseases, more drought resistant and more familiar to farmers. Crucially, harvested OPV maize may be retained as seeds for the next season, unlike hybrid seeds, which must be bought from the market each season.

In the District 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 quality of the inputs issued with the maize production.

2.2.6 Type of farm subsidy given and sustainable maize production

The types of inputs covered in the projects reviewed may be grouped into three categories of farm technologies: biological, chemical, and mechanical. Field-level agronomic research results and the extension of improved technical packages of inputs are not examined in this report, even though these factors are critically related to overall program and project success. Indeed, often a project is designed to produce a new input, or greater supplies of a traditional input, but there is no adequate farm level technological package to absorb the

increased 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. 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 that variety.

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). Agricultural productivity improvements have long been viewed as the foundation for economic prosperity and social development (Johnston et al, 1975). Asia's Green Revolution began in the 1960s with the development of fertilizer responsive, high-yielding varieties of rice and wheat (Evenson et al, 2003).

The national input subsidy program should focus on the use of urea (46% nitrogen) because of its lower unit cost of nitrogen than the compound fertilizer known as 23-21-0 (which contains 23% nitrogen and 21% phosphorus). At mid-2008 prices, urea will cost 5% less and provide 33% more nitrogen than the current mix of urea and 23-21-0. As there are concerns about longer-term phosphorus deficiency in the absence of phosphorus application, this measure should be viewed as an interim solution only (Denning et al, 2009).

Because nitrogenous fertilizers are subsidized more than Potassic and Phosphatic fertilizer, the subsidy tends to benefit more the crops and regions which require higher use of nitrogenous fertilizer as compared to the crops and regions which require higher application of P and K. In the case of fertilizer, the critical issue has been the imbalance in the use of NPK brought about by distortions in price ratio in favour of Nitrogenous fertilizer. It has already caused widespread soil degradation and reduced productivity which is becoming more acute with the passage of time. Therefore, at present, there is a need to promote balanced use of fertilizer which can be achieved either by redistributing the prevailing amount of fertilizer subsidy over NPK or by increasing subsidy on P and K in such a way that

farmers are induced to use NPK in the right proportion. This would not only check indiscriminate use of one kind of fertilizer to the detriment of the other but also reduce inter-regional and inter-crop disparities in fertilizer use. Farmers hardly pay any attention to emerging micronutrient deficiencies which are affecting productivity, quality and efficiency of fertilizer use. Massive efforts are needed for soil testing network to assess specific deficiencies at the regional and sub regional level. There is a need to take measures – including increasing the supply of such nutrients and even subsidization – to correct them (Evenson et al, 2003).

Drawing on insights from Byerlee et al. 2006 and Hazell et al. 2007, it is clearly shown that there is increased productivity for different types of agricultural products in countries with different characteristics, and then the major challenges that need to be addressed to achieve increased productivity. Distinctions are made first between different types of crops and products (and implicitly between different agro-ecological zones associated with these). Maize, rice (notably NERICA) and possibly wheat (though this is a much less important crop in Africa) are cereals with potential high responses to significant investments in inorganic (and organic) fertilizer application.

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' ability to use fertilizers effectively and efficiently. This is likely to be particularly the case with poorer farmers who do not have access to fertilizers for cash crop production and who are also less able to access improved seeds and extension advice. Several challenges were noted from the Malawi fertilizer programme among which was the need to improve program information sharing with the intended beneficiaries and general public; and shortages of fertilizers and mismatch of coupons and fertilizer types in some areas. (Dorward et al, 2008).

In one such case involving maize in Kenya, the droppelmann report 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.

2.3. Empirical Literature

The study was based on Social Protection Theory and is defined by the United Nations Research Institute for Social Development, as any concern with preventing, managing, and overcoming situations that adversely affect people's well being. Social protection consists of policies and programs designed to reduce poverty and vulnerability by promoting efficient labor markets, diminishing people's exposure to risks, and enhancing their capacity to manage economic and social risks, such as unemployment, exclusion, sickness, disability and old age.

Most common types of social protection include; Labor market intervention policies and programs designed to promote employment, the efficient operation of labor markets and the protection of workers, social insurance mitigation of risks associated with unemployment, ill health, disability, work-related injury and old age, such as health insurance or unemployment insurance and Social Assistance is when resources, either cash or in-kind, are transferred to vulnerable individuals or households with no other means of adequate support, including single mothers, the homeless, or the physically or mentally challenged (UNRISD, 2010). Social protection can also be taken to refer to the public actions taken in response to levels of vulnerability, risk and deprivation which are deemed socially unacceptable within a given polity or society (Norton et al, 2001).

To develop the conceptual underpinnings, the objectives and instruments of social protection are viewed under the rubric of Social Risk Management (SRM). SRM consists of public measures intended to assist individuals, households and communities in managing income risks in order to reduce vulnerability, improve consumption smoothing, and enhance equity while contributing to economic development in a participatory manner (Holzmann et al, 1999).

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. The little and unconsisted help from NGOs and religious organizations has not helped much thus calling for a serious government intervention through the NAAIAP programme. According to the UN Food and Agriculture Organization: "The right to food is the right to feed oneself in dignity. It is the right to have continuous access to the resources that will enable a person to produce, earn or purchase enough food to not only prevent hunger but also to ensure health and well-being." Promoting the right to food for all is an obligation for the 156 states that have ratified the International Covenant on Economic, Social and Cultural Rights, which legally binds states to respect, protect and fulfill the right to Food: "As

duty bearers, states have obligations towards the right to food. Respect prevents a state from placing barriers before those who want to feed themselves and ensures that no one interferes with another's right to food. This means that a state should facilitate the right to food by establishing an enabling environment, eliminating discrimination wherever it exists and should provide direct food aid when situations beyond a person's control make them unable to provide for themselves. This includes soliciting international assistance when a state's best efforts prove insufficient (IFSN, 2011).

Only 23 countries included the Right to Food in their constitutions as of late 2010, while just 13 countries recognize the Right to Food as a directive principle of state policy. Some states, however, are demonstrating a heightened commitment: In August 2010 the new constitution was approved by popular referendum in Kenya. Article 43 says that "every person has the right... to be free from hunger and to have adequate food of acceptable quality"; the constitution also mentions the "fundamental duty of the state" to protect and promote this and other rights (IFSN, 2011).

Just as food for social protection programmes can be sourced locally, so can agricultural inputs. Critics of input distribution programmes argue that they misdiagnose the inaccessibility of inputs as unavailability, noting that farmers are usually able to source seeds even after severe droughts. While free input distribution has recently been popular among donors and has effectively boosted agricultural production and household food security in the short term, critics argue that these interventions undermine local seed markets and are inappropriate to local farming systems, since tenders tend to be awarded to commercial seed and fertilizer companies which do not adequately consider the local context and often source their seeds from neighbouring countries (Barahona and Cromwell, 2005). As an alternative to free seed distribution, it is argued that seed voucher and fair schemes strengthen local economies through the sale of local seeds, are substantially more cost-effective and provide opportunities for information sharing among farmers. National Accelerated Agricultural Inputs Access Programme (NAAIAP) in Kenya distributed vouchers to 35,000 farmers, entitling them to buy seeds at locally organized seed fairs where farmers and local traders were encouraged to sell seeds (Wheeler, 2009).

2.5. Conceptual Frame Work

The conceptual framework involves the independent variable which is farm subsidy which is broken into specific variables which include timeliness in issuing, administration costs, amount, quality and type of farm subsidy.

The independent variable in this study is sustainable food security. Sustainable food security is said to be achieved when the independent variables interact leading to better health and increased household income.

The intervening variables in this study were different soil fertility levels, poor and inadequate rainfall distribution and inadequate agronomic education for the participating farmers. These variables were taken care of by stratifying the sample then selecting respondents from each stratum using simple random sampling technique.

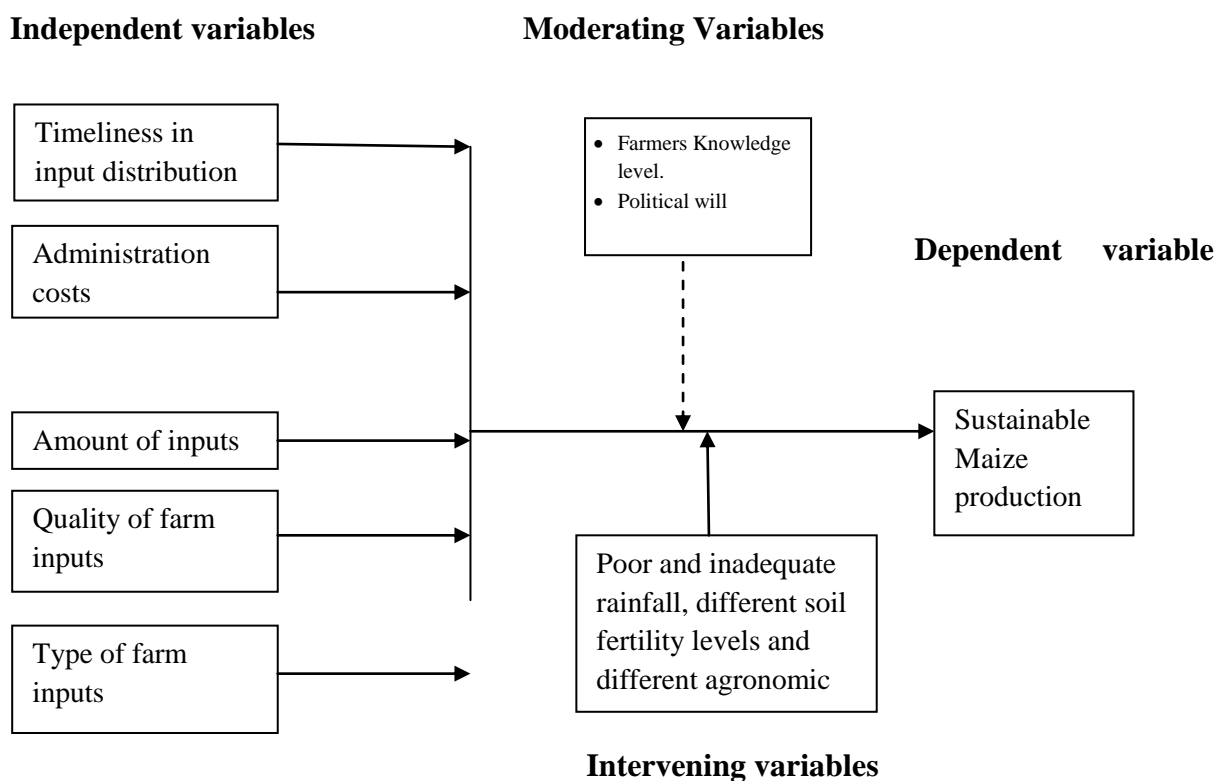


Figure 2:1 A conceptual framework on the relationship between farm subsidy and sustainable food security.

2.6 SUMMARY OF LITERATURE REVIEW

The literature reviewed show that there is influence of timeliness of farm subsidy provision to farmers with differing proportions in the developed countries but with almost same magnitude in developing countries in both Asia and Africa. The administration costs due to transport and storage seem not to be an issue in the developed countries like America but are a real factor in Asia, Africa particularly Kenya due to poor infrastructure development. Amount, type and quality of farm subsidy

supplied have been shown to have a direct correlation to food security from the literature reviewed and generally agreed in the world all over.

The literature available show not much has been done on how farm subsidy influences sustainable food production nationally but none was found for Transmara West district. This therefore necessitated the study of the influence of farm subsidy on sustainable food production in Transmara West District in Narok County.

CHAPTER THREE

RESEARCH METHODOLOGY

3.1 Introduction

This chapter deals with the description of the study area, research design, target population, sample size and sampling procedure, research instruments, data collection procedures, data analysis techniques, ethical considerations and finally data presentation.

3.2 The research design

The study was conducted using descriptive survey research design. 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 investigators observed the dependent variable and retrospectively study the independent variable for their possible effects on the dependent variables. The variables which are in this research did not lend themselves to any experimental manipulation. The researcher investigated and established the existence of certain relationships among the variables under investigations (Kerlinger, 1983). The design investigated the relationship between farm inputs, timeliness in release, administrative costs, amount, quality and type and sustainable food security.

The descriptive survey research enabled the researcher to provide both qualitative and numeric descriptions of the sample from a given population. The design is suitable for the study since it is cheaper and allows rapid data collection. It also has features that allow the researcher study and understand populations from a part of it.

3.3 The target population

The targeted population comprised of resource poor and food insecure households who the programme believed in lifting from perennial food poverty out of the 34,000 farm families in the district (DAO, 2009). The study population comprised all 1,500 farmers in all the divisions of Transmara west district who benefited from the farm subsidy from the ministry of Agriculture under the NAAIAP programme in 2009 and 2010 (DAO, 2009). These farmers were selected since they are considered to have had time to show the effects of the free inputs in the preceding years clearly as compared to those of 2011 and 2012 since they have not had time to plough back the benefits.

3.4 Sample Size and Sampling Procedure

3.4.1 Sample Size

Out of 1,500 farmers who benefited in the district, 150 farmers were chosen giving 10 % of the farmers by using stratified random sampling in which the population was divided to female adult, male adult, and youth (young warriors of less than 35 years of age from both sexes) (Mungenda and Mungenda, 1999). (kerlinger, 1983; Koul, 1984; Kothari, 1985; Kilemi and Wamuhii, 1995). This allowed the researcher to collect data faster and cheaply than other similar designs. The study population represented the targeted categories since special care was taken to include both male, female and youth farmers (Young warriors) as sub groups from the Ministry of Agriculture beneficiaries register (DAO,2009). All the seven officers from the Ministry of Agriculture participating in the programme were chosen using purposive sampling giving a total sample size of 157 respondents.

3.4.2 Sampling Procedure

The three subgroup subjects were selected using simple random sampling technique to ensure that each member of the sample population had an equal chance of being selected into the sample. A list of the total beneficiaries was obtained from the Ministry of Agriculture offices, Kilgoris. Stratification was be done for the population into male adult, female adult, and young farmers (35 years and below of both sexes). A final sample was selected where every tenth farmer in each category is picked from the list to get the required sample of 150 beneficiaries this was added to the 7 officers selected using purposive sampling procedure to get 157 respondents

3.5 Research instruments

These are methods used to collect the data for analysis. In this study questionnaire was used. Farmers' questionnaire was divided into seven sections. Section A gave personal and general information about the farmer. The other sections contained statements that accessed the type of inputs, amount, time issued, challenges faced from getting the voucher and bringing the utilizing the inputs to capture administrative issues and finally maize production per acre for the years after using the subsidy. An interview guide was used to get data from the officers from the Ministry of Agriculture (Appendix B).

3.5.1 Piloting of the instruments

The instruments were piloted in Transmara East district where fifteen farmers were selected using purposive sampling for the questionnaire administration. This was done to ascertain that the instruments actually measure what they purport to measure (Mungenda and Mungenda, 1999). Necessary adjustments were done on the questionnaire on areas showing weakness or difficulty for the respondents to correctly respond. A rerun was done for instruments upon which they were certified for use in data collection in Transmara West District.

3.5.2 Validity of the instruments

The term validity as used in research refers to the appropriateness; meaning and usefulness of any inferences a researcher draws based on data obtained through the use of an instrument (Kothari, R. C., 2006). According to Cohen and Manion (1994), validity refers to the extent to which the instrument measures what it purports to measure. Construct validity is the extent to which a test measure provides adequate coverage of the investigative questions guiding the study. To achieve reasonable content validity, the researcher sought opinions from colleagues, experts and the Ministry of Agriculture staff in the district (Arun, 1986).

3.5.3 Reliability of the instruments

This refers to the consistency of scores or answers provided by an instrument (Kothari, R.C. 2006). The researcher tested the reliability of the questionnaire by using farmers from Transmara East District that were not in the sample but participated in the NAAIAP Programme 2009-2010. This involved conducting a pilot study on the farmers and interviewing the same farmers after two weeks. The reliability coefficient of the instrument was computed by Pearson product moment of correlation method where a coefficient of correlation was obtained at 5% degrees of confidence between the first and the second scores using the formula below:-

$$r = \frac{\sum_{XY} - \frac{(\sum_y)(\sum_x)}{N}}{\sqrt{\left[\sum_x^2 - \frac{(\sum_x)^2}{N} \right] \left[\sum_y^2 - \frac{(\sum_y)^2}{N} \right]}}$$

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 coefficient of 0.78 was obtained for the questionnaires. This is in concurrence with Fraenkel and Wallen (2000) who noted that a coefficient of 0.7 provides a minimum threshold to confirm reliability of a research instrument.

3.6 Data collection procedures

The researcher sought permit from the Ministry of Education, Science and Technology and a permit issued authorized the researcher to conduct the study. Using the letter obtained from National council for Science and Technology the researcher sought permission from the District Commissioner and the District Agricultural Officer (DAO) to be introduced to the divisional heads especially the Divisional Agricultural Extension Officers (DAEOs). The researchers personally visited the divisions and sought permission from the divisional head of agriculture and explained the purpose of the visit. The investigator was 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 investigator gave out the questionnaires to the farmers using the research assistants in their homes with the help of the frontline extension officer to avoid suspicion. Three research assistants assisted the researcher collect the information and it took a period of one week after which data was submitted for analysis.

3.7. Data analysis Techniques

According to Bryman Cramer (1999) data analysis helps in fulfilling research objectives and provides answers to research questions. The results were analyzed using

statistical packages for social scientists (SPSS). Both quantitative and qualitative methods were used to enable the researcher reach to accurate data interpretations.

3.8 Operational Definition of variables

According to Mugenda and Mugenda (2006), this refers to the descriptions of operations that are used in measuring the study variables. This includes research objectives, type of variables, indicators, measure and level of scale, data collection methods which are put in a diagram to show how they interact with the variables as shown in appendix D.

3.9.0 Ethical Consideration

The researcher explained the aim of the study to the participants. He also assured the respondents of their confidentiality and the ability to withdraw from study if they deemed so. The researchers assured the respondents of the respect of the individual's rights and safeguard their integrity. The researcher further assured them that the information collected was to remain confidential and was to be used for the intended purpose only. No incentives were offered to motivate the respondents and that consent was sought from all the participants filling the questionnaire.

CHAPTER FOUR

DATA ANALYSIS PRESENTATION AND INTERPRETATION

4.1 Introduction

This chapter presents data analysis and discussion of the findings on the Influence of farm subsidy on sustainable food production in Transmara West District, Narok County. The data was analyzed with the help of a computer program, SPSS version 11.5. The chapter is organized into two major sections, namely results and discussion of the findings.

4.2 Questionnaire Return Rate

A total of 150 farmer questionnaires were administered and 7 for Agricultural officers and all were returned. The return rate was 100% since the researcher followed the administration in parson

4.2 Results

This section presents the findings that were obtained from the data collection instruments. The section is presented as follows: background information of the respondents, effect of timeline of subsidy of farm input on food security, influence of administration cost of farm subsidy on level of farm production, influence of amount of farm subsidy on maize production, influence of the quality of farm subsidy on maize production and influence of the type of farm subsidy supplied on maize production.

4.2.1 Background Information

Background information is made up of the general characteristics of the respondents such as sex, age and working experience among many others. The respondents (farmers and agricultural officers) were asked to provide their background information.

4.2.1.1 Background Information of Farmers

a) Sex

In response to the background information, the farmers were first asked to indicate their sex. This was classified into either male or female.

More than a half of the farmers, 87 (58%) were male while 63 (42%) were female. The differences in gender presentation are small since the study ensured good gender representation.

b) Age Bracket

The farmers were further asked to indicate their age bracket. This was categorized into 19-25 years, 26-35 years, 36-40 years and 41 years and above.

Table4.1: Distribution of the Farmers by their Age Bracket

Age bracket(years)	Number	%
19-25	8	5.3
26-35	47	31.3
36-40	46	30.7
41 and above	49	32.7
	150	100

An overwhelming majority of the farmers, 94.7% (n=150) who participated in the study were 26 years of age and above. However, a small percentage of them, 5.3% (n=150) were between the ages of 19-25 years. This may be a reflection that the youth are also putting some effort in the agricultural sector as a way of earning a living and improving their livelihoods.

c) Years of Experience as Farmers

The farmers were also asked to indicate their years of experience as farmers. The experiences were categorized into 2-5 years, 6-10 years, 11-15 years, 16-20 years and 21 years and above.

Table 4.2: Distribution of the Farmers by years of Experience as farmers

Working Experience (years)	Number	%
2-5	8	4.7
6-10	33	22
11-15	43	28.7
16-20	24	16
21 and above	43	28.7
	150	100

From **Table 4.2** above, majority of the farmers, 73.4%(n=150) had more than 11 years as farmers. Another slightly more than a quarter of them, 26.7%(n=150) had a working experience of not more than 10 years.

4.2.1.2 Background Information for Agricultural Officers

The agricultural officers were also asked to indicate their background information. These include sex, age, academic qualification, working experience and work designation. The background information is as summarized by the table 4.3 below.

Table 4.3a: Background Information of the Agricultural Officers

	Frequency (F)	Percentage (%)
Sex		
Male	7	100
Age		
26-30 years	2	28.6

31-50 years	3	42.9
Above 50 years	2	28.6
Academic Qualification		
Certificate	3	42.9
Diploma	4	57.1
Working Designation		
Senior Agriculture Assistants (SAA)	2	28.6
Divisional Agricultural Extension Officer	2	28.6
Assistant Agricultural Officer (AAO)	2	28.6
Livestock Production Assistant	1	14.3
Working Experience		
Less than 1 year	1	14.3
2-5 years	1	14.3
6 years and above	5	71.4

As tabulated, all of the agricultural officers 100% (7) who participated in the study were male. In terms of age, a good number of the officers (5) were 31 years and above only two of them (2) were noted to be below 31 years. Academically, quite a tangible number of the officers (4) had a diploma as the highest level of education whereas the remaining three (3) had a certificate.

With reference to the working designation, it was observed that the officers came from diverse designations. However, most of those who participated in the study were made up of Senior Agriculture Assistants (SAA) (2), Divisional Agricultural Extension Officers (2) and Assistant Agricultural Officers (2) respectively. In terms of the working experience, a good number of the officers (5) had a working experience of not less than 6 years.

4.2.2 Timeliness of Inputs and Food Security

The issue of timeline may be considered as to influence agriculture in one way or the other. This may be due to the fact that agriculture takes place in seasons hence if time is miscalculated, a farmer may be forced not to plant crops and wait for the next season. This study was interested in finding out the extent to which timeliness in release of farm subsidy to farmers influenced the level of maize production in Transmara West district.

4.2.2.1 Effect of Timeliness of Subsidy on Food Security

The farmers were asked to indicate whether they strongly agreed (SA), agreed (A), undecided (UD), disagreed (D) or strongly disagreed (SD) with various statements regarding the effect that timeliness of subsidy of farm inputs had on food security.

Table 4.4: Distribution of Farmers on the Effects of Timeliness of Subsidy of Farm Inputs on Food Security

Statements	SA		A		UD		D		SD	
	F	%	F	%	F	%	F	%	F	%
Delay in application and receiving of farm subsidy hinders farmers from matching their farming activities with the right weather conditions	106	70.7	42	28.0	1	.7	-	-	1	.7
Disbursement procedures of farm subsidies are cumbersome and time consuming in the region and this hinders farmers from planting on time	34	22.7	59	39.3	9	6.0	40	26.7	8	5.3
Delays in the release of funds have led to delayed payments to input suppliers and service hence affecting negatively crop production in the area	39	26.0	27	18.0	76	50.7	5	3.3	3	2.0
Tendering process of farm input supplies is long, thus delaying the supplies	45	30.0	13	8.7	85	56.7	6	4.0	1	.7
Delays in planting creates losses in both yields and income	90	60.0	55	36.7	2	1.3	1	.7	2	1.3

In terms of the application and receiving of farm subsidy, an overwhelming majority of the farmers 98.7% (150) were positive by either agreeing or strongly agreeing to the statement that delay in the application and receiving of farm subsidy hindered the farmers from matching their farming activities with the right weather conditions. However, only one of them 0.7% (150) was in disagreement.

With reference to the disbursement procedures, majority of the farmers 62% (150) either strongly agreed or agreed that the disbursement procedures in the region were cumbersome and time consuming and hindered the farmers from planting their crops on time. On the other hand, slightly more than a quarter of them 26.7% (150) were in disagreement with the statement.

Asked to indicate whether delays in the release of funds led to delayed payments to input suppliers and service hence affecting negatively crop production in the area, some half of the farmers, 50.7% (150) were undecided. However, slightly less than half of them, 44% (150) were positive.

With reference to the influence of the tendering process on farm production, slightly more than a half of the farmers, 56.7% (150) were undecided. The study found that slightly more than a third of the farmers, 38.7% (150) either agreed or strongly agreed that tendering process had influence on the farm production.

4.2.2.2 Punctuality of Government Provision on Farm Subsidy

The farmers were further asked to indicate whether the government provided the farm subsidies in the area in time or late and how timeliness factor in farm subsidy supply influenced crop farming. A mixed response was obtained.

There was a mixed response with regard to the timelines the government provided the farm subsidy. Slightly more than a half of the farmers, 51% (150) indicated that the government did not provide the farm subsidies on time. Another 49% (150) of farmers indicated that the government did provide the farm subsidies in time. This could imply that government tried to provide the subsidy in time but sometime late.

In response to how timeliness factor in farm subsidy supply influenced crop production, a good number of the farmers indicated that untimely supply of the subsidies was a barrier to achieve the required crop yield and meet the market demand.

Agricultural officers on other hand were also asked to explain whether the farm subsidies provided by the government in the area were on time. Out of the seven (7) officers who participated in the study, four of them (4) reported that the farm subsidies were not being provided on time. One of them had the following to say:

Farm subsidies are supposed to come before planting season, that is prior to December. However, these subsidies come later either during the planting season or when the season is almost over. For instance, during the previous season Kirindon NCPB had no subsidized fertilizers and the farmers were forced to plant their crops without the fertilizers (Agricultural Officer II, 2012).

Another officer made the following observation:

Farm subsidies in this area are not provided in time by the government. This is because in most cases farmers receive the farm subsidies such as seeds and fertilizers from the government later after they have already planted due to poor and long procurement processes (Agricultural Officer I, 2012).

However, in contrary, there were those few who reported that the farm subsidy was being provided by the government to the farmers on time. They reported that immediately the government released the subsidies the farmers were able to get them on time. One of them reported that:

The planting season for long rains in this region is in January and February. The government provides farm subsidies to the farmers during the period of December or just at the beginning of January. This makes them to be able to plant their crops on time (Agricultural Officer VII, 2012).

From the findings on the effects of timeliness of subsidy of farm inputs on crop production, it may be concluded that indeed timeliness do influence the production of crops in Transmara West district. Farmers who do not receive farm subsidies such as seeds and fertilizers on time are not able to achieve a lot during the planting season. It is however noted

that there are still loopholes in the distribution procedure that hinders farmers from receiving the subsidies on time.

4.2.3 Influence of Administrative Costs of Farm Subsidy

Denning et al, (2009) have noted that the governments' weak capacity to implement programs, and their inability to take account of the diversity of production systems and farmers' needs may be attributed to high and unsustainable fiscal and administrative costs. This study sought to establish how the administration costs (storage and transport) of the farm subsidy influenced the level of maize production in Transmara West district.

4.2.3.1 Influence of Administration Cost of Farm Subsidy on Level of Farm Production

The farmers were asked to indicate whether they strongly agreed (SA), agreed (A), undecided (UD), disagreed (D) or strongly disagreed (SD) to various statements regarding the influence of administrative cost (on Storage and Transport) of farm subsidy on farm production.

Table 4.5: Distribution of the Farmers on the Influence of Administrative Cost on Farm Production

Statements	SA		A		UD		D		SD	
	F	%	F	%	F	%	F	%	F	%
The high administrative cost on storage and transport hinders the supply of farm inputs	48	32.0	67	44.7	25	16.6	9	6.0	1	.7
Poor infrastructure hinders the supply of farm inputs	79	52.7	68	45.3	1	.7	1	.7	1	.7
Lack of enough human labour to transport the subsidies hinders their supply	12	8.0	65	43.3	26	17.4	44	29.3	3	2.0
Some farmers travel to long distances to access the subsidies	66	44.0	61	40.7	3	2.0	20	13.3	-	-
There is poor delivery system which affects farm production	46	30.7	90	60.0	8	5.4	6	4.0	-	-

Asked to indicate whether the high administrative cost on storage and transport hindered the supply of farm inputs in the area, a majority of the farmers, 76.7% (150) were positive. Some, 16.6% (150) were either disagreed or strongly disagreed.

An overwhelming majority of the farmers either strongly, 52.7% (150) or agreed strongly agreed 45.3% (150) that poor infrastructure in the area hindered effective supply of farm inputs. This implies that poor infrastructure is indeed a factor that could really hinder effective supply of farm inputs in the area.

Asked to indicate whether lack of enough human labour to transport the farm subsidies hindered their supply, 43.3% (150) of the farmers agreed. On the other hand, slightly more than a third of them 29.3% (150) were in disagreement meaning that it was not a factor as such.

In terms of accessibility of farm inputs, an overwhelming majority of the farmers 84.7% (150) either agreed or strongly agreed that indeed, some farmers had to travel long distances for them to be able to access farm inputs. A few of them, 13.3% (150) however differed.

With reference to the delivery system used in supplying farm inputs, an overwhelming majority of the farmers, 90.7% (150) indicated that the area had a poor delivery system which affected farm production negatively.

4.2.3.2 Type of Storage used by Farmers

The farmers were asked to indicate which type of store they used. The two major storage facilities indicated included granary and silos.

An overwhelming majority of the farmers 86% (150) indicated that they used the granary for storing their farm inputs and products. A few of them 14% (150) however indicated that they used the silos. This is an indication that most of the storage facilities are not permanent and hence may limit the storage of inputs and crops produced. This may lead to inputs being destroyed by effects of weather and other agents especially seeds which require a cool dry storage.

The farmers were further asked to explain how the administrative cost (storage and transport) of farm inputs influenced crop farming in the area. Most of them explained that due to high transport cost and poor infrastructure, crop farming wasn't doing well due to inadequacy and limited supply of farm inputs. This affected negatively the available food

obtained during the harvesting seasons. Additionally, poor storage due to high administrative cost of managing the modern storage facilities was noted as to lead to losses of farm inputs once delivered from the stockists. The farmers also explained that storage and supply factors were affecting crop farming in the area because they caused delays and also increased the prices of farm inputs.

During the interview, the agricultural officers were also asked to indicate the type of storage facilities that were commonly used by farmers in Transmara West District. Majority of them reported that most of the farmers in the district used granaries for storing their Farm inputs. They further explained that most of these storage facilities were not permanent and thus could not be used for storing the inputs for a longer period without getting spoiled.

The officers were further asked to explain how the administrative cost of storage and transport hindered the supply of farm inputs in the area. Most of them explained that high cost of administration factor especially in terms of storage and transportation led to the delay of supply of farm inputs in the area and this influenced negatively crop production. One of the Agricultural Officers reported that:

The roads in the area are impassable and especially during the rainy seasons. This leads to the increase in transportation cost of farm subsidies which causes the delay in supplying of the subsidies. As a result farmers are forced to plant late of which it minimizes the amount of crops yielded. Further, inputs stored in the storage facilities available may easily get spoilt either by being rained on or destroyed by the pests. This is because most of the storage facilities are of poor quality (Agricultural Officer VII, 2012).

Another one reported that:

Due to high administration cost in the construction and maintenance of permanent storage facilities, there are no such facilities within the division to cater for safe storage of farm inputs. As a result, farmers have to incur transport costs for getting inputs in Kilgoris. On the other hand, suppliers find it difficult and challenging to bring inputs close to the farmers in the area due to the high cost of transport which is due to the poor roads (Agricultural Officer V, 2012).

It may be concluded that indeed the administrative cost on storage and transportation of farm inputs has proved to influence maize production in the region to some extent. Due to poor roads, transportation cost is so high and this limits suppliers from distributing farm

inputs to the farmers and especially during the rainy season. Further, high administration cost on maintaining and constructing permanent storage facilities has also hindered the residents from having permanent storage for farm inputs. Hence, those that they have at times lead to the destruction of farm inputs that may be stored in them either by being rained on or by pesticides.

4.2.4 Influence of Amount of Farm Subsidy Disbursed on Maize Production

Farm production is subject to the amount of farm subsidy disbursed. Increased amount of farm subsidy disbursed may lead to the increase of yields obtained and vice versa. This study sought to examine the influence of the amount of farm subsidy disbursed on maize production in Transmara West District. The farmers were asked to indicate whether the amount of farm subsidy provided by the government in relation to the farm size, production value and Cost incurred in purchase and delivery were adequate.

Table 4.6: Distribution Farmers on the Adequacy of Farm Subsidy Disbursed in relation to farm size, production value and cost incurred in purchase and delivery

Statements	Yes		No		Not Sure	
	F	%	F	%	F	%
Farm Size	3	2.0	62	41.3	85	56.7
Production Value	73	48.7	67	44.7	10	6.7
Cost incurred in purchase and delivery	71	47.3	64	42.7	15	10.0

Asked to indicate whether the farm subsidy disbursed by the government in relation to farm size was adequate, slightly more than a half of farmers 56.7% (150) indicated that they were not sure. However, 41.3% (150) of them indicated that it was not adequate. This generally implies that the farm input was not adequate.

In terms of adequacy of farm subsidy on production value, 48.7% (150) of the farmers indicated that farm subsidy provided was adequate. However, another 44.7% (150) of them indicated that it was not adequate. This shows that despite the fact that the government provides some level of farm subsidy, it is not as adequate as the farmers' expectation.

Asked to indicate whether the farm subsidy disbursed by the government to the farmers in relation to the cost incurred in purchase and delivery was adequate, slightly less than a half of the farmers 47.3%(150)indicated that it was adequate. However, more than a third of them, 42.7%(150) indicated that it was not adequate.

In general, the study sought to establish the adequacy of the farm subsidy. Figure 4.6 conclusively shows the distribution of farmers.

It was observed that, an overwhelming majority of the farmers, 81%(150) indicated that the farm subsidy disbursed by the government was not enough. However, only a few of them 19%(150) indicated that it was enough.

Additionally, the farmers were further asked to explain how the amount of farm subsidy disbursed by the government affected crop production. Most of the farmers explained that little amount of farm subsidy that were being disbursed by the government determined the minimal yields that were being obtained from the farms at the end of the harvesting period.

The agricultural officers were also asked to give their opinion on the adequacy of the amount of farm subsidy that were 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. (Agricultural Officer VII, 2012).

From the findings on how the amount of farm subsidy disbursed to farmers influenced maize production, it can be deduced that the amount does influence to a greater extent. This is to say that if large amounts of farm inputs are distributed to the farmers, then there is a high probability the crop production will increase. This study however established that the amount of farm input given to the farmers in Transmara West District was inadequate. This implies negative effects in farm production and therefore food insecurity.

4.2.5 Quality of Farm Subsidy and Sustainable Food Production

Growth of agriculture is critically determined by the use of modern inputs like fertilizers, seeds, plant propagation material, other agricultural chemicals and by the availability of credit to purchase these and other inputs. 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 ought to determine how the quality of the farm subsidy given influenced maize production in Transmara West District.

4.2.5.1 Influence of the Quality of Farm Subsidy on Maize Production

The farmers were asked to indicate whether they strongly agreed (SA), agreed (A), undecided (UD), disagreed (D) or strongly disagreed (SD) to various statements regarding the influence of the quality of farm subsidies on crop production.

Table 4.7: Distribution of the Farmers on the influence of Quality Farm Subsidy on Maize Production

Statements	SA		A		UD		D		SD	
	F	%	F	%	F	%	F	%	F	%
Quality seeds are in short supply	14	9.3	65	43.3	3	2.0	47	31.3	21	14.0
Quality seeds is a determinant of productivity	82	54.7	62	41.3	6	4.0	-	-	-	-
There are no quality checks	20	13.3	45	30.0	32	21.3	28	18.7	25	16.7

by the government on the farm input subsidies this hinders the quality of crops harvested

Most Farmers do not care on the quality of seeds provided as subsidies due to ignorance	11	7.3	43	28.7	15	10.0	64	42.7	17	11.3
Low quality seeds affects production negatively	83	55.3	57	38.0	6	4.0	3	2.0	1	.7
Farm subsidies provided are vulnerable to pests and diseases	7	4.7	10	6.7	5	3.3	89	59.3	39	26.0
The type of input distributes is due to the price level in the market	19	12.7	43	28.7	36	24.0	37	24.7	15	10.0
Farm inputs provided are not environment friendly	10	6.7	5	3.3	3	2.0	96	64.0	36	24.0

More than half of farmers either agreed, 43.3%(150) or strongly agreed 9.3%(150) that quality seeds were in short supply in the area. However, slightly less than a third of them 31.3%(150) disagreed.

In terms of crop productivity, an overwhelming majority of the farmers 96%(n=150) were positive by either strongly agreeing or agreeing that quality seeds were the determinants of quality crop productivity.

Asked to indicate whether lack of quality checks by the government on the farm input subsidies hindered the quality of crops harvested, 43.3%(150) of the farmers were positive. However, slightly more than a third of them 35.4%(150) were negative to the statement by either strongly disagreeing or disagreeing.

Slightly more than a third of the farmers 36%(150) either strongly agreed or agreed that due to ignorance, most farmers did not care on the quality of seeds provided as subsidies and this affected negatively the maize production in the area.

A majority of the farmers 85.3%(150)were differed with the statement that farm subsidies provided in the area were vulnerable to pests and diseases.

4.2.5.2 Quality Ratings of Farm Subsidies

The farmers were further asked to rate the quality of the farm subsidies that were being provided by the government. The quality ratings were categorized into either poor, good, average and not at all.

Table 4.8: Distribution of the farmers' Ratings on the Quality of Farm Subsidies provided by the Government in the Area

Quality ratings	Number	%
Poor	15	10
Average	32	21.3
Good	82	54.7
Undecided	21	14
Total	150	100

From the table above Table4.8 slightly more

than a half of the farmers 54.7%(150) who participated in the study indicated the quality of the farm subsidies that were being provided by the government was good. Slightly less than a quarter of them 21.3%(150) indicated that it was average.

In general, the study sought to establish what farmers felt regarding the quality of farm input subsidy provided by the government on maize production in the area. A good number of the farmers explained that the quality of the seeds provided by the government boosted the crop yields. However, they also explained that the quality of the fertilizers supplied was not that good; hence it hindered them from achieving maximum yields from the seeds planted.

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.

From the findings, this study concludes that the quality of farm subsidies provided by the government to the farmers in Transmara West District were of good quality although not all are satisfied. The biggest issue however is that these subsidies are not adequate enough to cater for all the farmers in the area and this may cause some of the malice business people to come up with various other inputs that are not certified hence alluring farmers to use them and in the end they do not bring the positive results expected.

4.2.6 Influence of the Type of Farm Subsidy Supplied on 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. This study sought to assess how the type of farm subsidy supplied influence maize production in Transmara west district. The farmers were asked to give their response with regard to the influence of the type of farm input subsidy provided by the government on farm production.

Table 4.9: Distribution of the Farmers on the Influence of the Type of Farm Input Subsidy Provided By the Government on Farm Production

	State ment s	Yes	No	Not Sure	F	%
Use of unfavourable type of fertilizer causes soil degradation	100	66.7	18	12.0	32	21.3
Unfavourable type of seeds hinders crop production	147	98.0	3	2.0	-	-
Use of different type of inputs causes crop disparities	127	84.7	15	10.0	8	5.3
Farmers hardly pay any attention to emerging micronutrient deficiencies which are affecting productivity, quality and efficiency of fertilizer use.	115	76.7	12	8.0	23	15.3
mismatch of coupons and fertilizer types affects crop production negatively	91	60.7	10	6.7	49	32.6

A majority of the farmers 66.7%(150) indicated that the use of unfavourable type of fertilizer caused soil degradation and this affected negatively crop production in the area. On the other hand, slightly less than a quarter of them 21.3%(150) were not sure.

In terms of seeds, an overwhelming majority of the farmers 98%(150) indicated that use of unfavourable type of seeds hindered crop production to a greater extent.

Asked to indicate whether the use of different types of farm input subsidies had any effect on crop production, majority of the farmers 84.7%(150) were in agreement that the use of different types of farm inputs brought about crop disparities and this affected negatively crop production in the area. A few of them 10%(150) however disagreed to the statement.

A majority of the farmers, 76.7%(150) agreed that farmers hardly paid any attention to emerging micronutrient deficiencies which in turn affected the productivity, quality and efficiency of fertilizer use. It was however noted that a few of the farmers, 15.3%(150) were not sure.

An overwhelming majority of the farmers, 60.7%(150) were in agreement that mismatch of coupons and fertilizer types affected crop negatively production. In the same line on the influence of the type of the farm subsidy, the farmers were further asked to explain how they thought that type of farm input subsidy provided by the government in the area influenced crop production. The farmers explained that poor quality of both the seeds and the fertilizers had led to low crop production over the years. They further added that over the period, there had not been any much increase in the maize yield generally in almost all of the farms. However, they also explained that if provided with the right type of farm inputs and at the right time, crops yield would increase.

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)

The officers further explained that the type of farm inputs that were being distributed by the government were favourable to the environmental conditions in the area. Agricultural Officer I (2012) went ahead to state that:

The type of farm subsidies distributed by the government is most favourable to the environmental conditions of this area. This is because, when used, the subsidies boosted the yields by about 50%.

Another one further pointed out that:

Yes, the type of farm input supplied is favourable to the environmental conditions. This is due to the fact that the type of soil, climate and attitude of the region favour the type of farm inputs supplied. (Agricultural Officer V, 2012)

From the findings on the influence on the type of farm subsidy and crop production, it may be noted that indeed the type of farm input influences crop production to a greater extent. This is whereby if the subsidy doesn't match the environmental conditions of the area

then it may lead to a loss of both crops and financial resources and vice versa. Moreover, the type of farm subsidy that is provided mostly by the government includes 10 kg of hybrid seeds, 50 kg of (Diammonium Phosphate (D.A.P)) basal fertilizer and 50 kg of Calcium Ammonium Nitrate (C.A.N) for top dressing.

4.3 Discussion of the Findings

This section presents the discussion of the findings based on the major key areas of the study. The discussion is in the light the related literature.

This study found that the disbursement procedures ranging from obtaining financial resources to farm inputs in the region were cumbersome and time consuming and this hindered the farmers from planting their crops on time. In the same line, Solem et al. (1985) observed that cumbersome and time consuming loan procedures and levying of stamp duty on loans for agriculture and allied activities impeded farmers' access to bank credit and influenced them negatively in the purchasing of farm inputs on time.

Denning et al, (2009) stated that the delays in the release of funds by the Ministry of Finance and National Planning, Malawi and the prolonged tendering process led to delayed payments to input suppliers and service providers under the Fertilizer Subsidy Programme (FSP). This statement is in line with the findings of this study whereby 44% of the farmers who participated in the study indicated that delays in the release of funds led to delayed payments to input suppliers and service hence affecting negatively crop production in their area.

It may be observed that timeliness in planting is a very important aspect of farming. Any delays in planting can cause great losses in both yield and income. One of the causes of delayed planting is lack of early preparation – early planting therefore calls for proper planning. Planning involves making timely decisions on required inputs (icipe, 2008). This goes hand in hand with the findings of this study, where almost all the farmers, 98.7%(n=150) confirmed that delay in the application and receiving of farm subsidy hindered the farmers from matching their farming activities with the right weather conditions.

This study also found that high administrative cost on storage and transport hindered the supply of farm inputs. An earlier study by Djurfeldt (2005) also indicated that poor infrastructure and related high transport costs for farm inputs among other variables contribute to the low agricultural productivity growth and therefore food insecurity in a given region. Further, poorly developed infrastructure leads to an increase in the cost incurred for

transporting inputs to remote areas. The findings of this study showed that 52% of farmers in the study strongly agreed that poor infrastructure hindered effective supply of farm inputs. The study also found that high administrative cost especially on the construction and development of permanent infrastructure prevented the farmers from permanent storage facilities. Thus, they opted for granaries which were temporary structures.

Morris et al., (2007) 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. This is inline with the findings of this study where slightly more than a half of the farmers 54.7%(150) rated the quality of the farm subsidies that were being provided by the government as being good and as such increasing their farm yields. Most of the farmers who had the opportunity to use the subsidies indicated that the high quality of farm inputs boosted the crop production.

The growth of agriculture is critically determined by the use of modern inputs like fertilizers, seeds and plant propagation material among many other of which in most cases they are of high quality (Solem at al, (1985). This study revealed that an overwhelming majority of the farmers, 96%(150) felt that quality seeds were the determinants of quality crop productivity.

With reference to the quality check up of farm inputs, it has been observed that quality checks on inputs are becoming more important as the unscrupulous trade fleecing farmers by selling spurious seed, fertilizer and chemicals had been on the rise (Government of India, 2007). According to 43.3%(150) of the farmers in this study, lack of quality checks by the government on the farm input subsidies hindered the quality of crops harvested. This served as an indication that the quality of farm input supplied by the government is to some extent compromised.

According to NAAIAP (2009), farmers receive 50 kg of basal fertilizer, fifty kilograms of top dressing fertilizer and ten kilograms of hybrid maize commonly known as the 'kilimo plus' package during the planting seasons. This matches with the findings of this study where most of the agricultural officers reported that the farmers were being provided 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.

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 Transmara West District, Narok County.

5.2 Summary

The main purpose of this study was to assess the influence of farm subsidy on sustainable food production in Transmara West District, Narok County. It was further guided by the following research objectives: to investigate the extent to which timeliness in release of farm subsidy to farmers influence the level of maize production in Transmara West district, to establish how the administration (storage and transport) costs of the farm subsidy influenced the level of maize production in the district, to investigate the influence of the amount of farm subsidy disbursed on maize production in Transmara West district, to determine how the quality of the farm subsidy given influence maize production in Transmara West district and to assess how the type of farm subsidy supplied influence maize production in Transmara west district.

The study employed a survey research design. The sample of the study included 150 farmers and 7 agricultural officers. The farmers were arrived at through simple random sampling procedure where 10% of the farmers were chosen. On the other hand, agricultural officers were arrived at through purposive sampling procedure.

Questionnaires were used to collect data from the farmers whereas interview guide was used to collect data from the agricultural officers. The collected data from all the farmers were statistically analyzed with the help of Statistical Package for Social Sciences (SPSS Version 11.5). Those gathered from the agricultural officers were analyzed qualitatively. Descriptive statistics such as frequencies and percentages, figures and tables were used to summarize the data.

From the analysis, the study established that an overwhelming majority of the farmers 98.7%(150) were positive by either agreeing or strongly agreeing that delay in the application

and receiving of farm subsidy hindered the farmers from matching their farming activities with the right weather conditions.

Majority of the farmers 62%(150) either strongly agreed or agreed that the disbursement procedures in the region were cumbersome and time consuming and hindered the farmers from planting their crops on time.

A half of the farmers 50.7%(150) were undecided on whether delays in the release of funds led to delayed payments to input suppliers and service hence affecting negatively crop production in the area whereas 44%(150) of them were positive by either agreeing or strongly agreeing.

Slightly more than a half of the farmers 56.7%(150) were undecided on the statement that the tendering process of farm input supplies was long, thus delaying the supplies and hence affecting negatively the farming activities in the region. However, slightly more than a third of the farmers 38.5%(150) either agreed or strongly agreed to the latter.

Slightly more than a half of the farmers 51%(150) indicated that the government did not provide the farm subsidies on time.

Majority of the farmers 76.7%(150) were positive by either agreeing or strongly agreeing to the statement that high administrative cost on storage and transport hindered the supply of farm inputs in the area.

Slightly more than a half of the farmers 52%(150) strongly agreed to the statement that poor infrastructure in the area hindered effective supply of farm inputs. This was further supported by 45.3%(150) of them who were in agreement to the latter

43.3%(150) of the farmers agreed to the statement that lack of enough human labour to transport the farm subsidies hindered their supply.

An overwhelming majority of the farmers 84.7%(150) were positive to the statement that some farmers had to travel long distances for them to be able to access farm inputs by either agreeing or strongly agreeing.

An overwhelming majority of the farmers 90.7%(150) indicated that the area had a poor delivery system which affected farm production negatively and an overwhelming majority of the farmers 86%(150) indicated that they used the granary for storing their farm inputs.

The amount of farm subsidy distributed by the government to the farmers in terms of farm size, production value and Cost incurred in purchase and delivery is roughly inadequate and an overwhelming majority of the farmers 81%(150) indicated that the farm subsidy disbursed by the government was not enough.

Most of the farmers explained that little amount of farm subsidy that were being disbursed by the government determined the minimal yields that were being obtained from the farms at the end of the harvesting period.

A good number of the farmers 43.3%(150) agreed that quality seeds were in short supply in the area and an overwhelming majority of the farmers 96%(150) were positive by either strongly agreeing or agreeing to the statement that quality seeds were the determinants of quality crop productivity and that 43.3% (50)of the farmers were positive by either agreeing or strongly agreeing to the statement that lack of quality checks by the government on the farm input subsidies hindered the quality of crops harvested.

Slightly more than a third of the farmers 36%(150) either strongly agreed or agreed to the statement that due to ignorance, most farmers did not care on the quality of seeds provided as subsidies and this affected negatively the maize production in the area and slightly more than a half of the farmers 54.7%(150) rated the quality of the farm subsidies that were being provided by the government as being good whereas slightly less than a quarter of them 21.3%(150) indicated that it was average.

High quality of seeds boosted the crop production however the poor quality of fertilizers limited the farmers from obtaining fully the best out of the planted crops. A majority of the farmers 66.7%(150) indicated that the use of unfavourable type of fertilizer caused soil degradation and this affected negatively crop production in the area. On the other hand, slightly less than a quarter of them 21.3%(150) were not sure.

An overwhelming majority of the farmers 98%(150) indicated that use of unfavorable type of seeds hindered crop production to a greater extent while 84.7%(150) of them were in agreement that the use of different types of farm inputs brought about crop disparities and this affected negatively crop production in the area.

A majority of the farmers 76.7%(150) agreed that farmers hardly paid any attention to emerging micronutrient deficiencies which in turn affected the productivity, quality and efficiency of fertilizer use and a majority of the farmers 60.7%(150) were in agreement to the statement that mismatch of coupons and fertilizer types affected crop production negatively.

Some of the types and amount of farm inputs provided by the government to the farmers include 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.

5.3 Conclusion

This study established that adherence to set timelines in supply of farm subsidy was an issue. This was attributed to loopholes within the distribution procedure that hindered farmers from receiving the subsidies on time. Based on this the study concludes that lack of adherence to timelines in supply of farm subsidies remains one of the major impediment to food security not only in Transmara West District but also in other districts in Kenya.

The administrative cost on storage and transportation of farm inputs has influence on the maize production in the in Transmara West District. The District has poor transportation infrastructure and this has led to the high cost of transportation cost. This limits suppliers from distributing farm inputs to the farmers and especially during the rainy season. Further, high administration cost on maintaining and constructing permanent storage facilities has also hindered the residents from having permanent storage for farm inputs. Thus, the study concludes lack of sustainable food security in Transmara West District is partly attributed to high administrative costs in terms of storage and transportation bearing in mind that the district is within Arid and Semi Arid Lands (ASAL)

Sustainability of food security in Transmara West District cannot be assured with supply of inadequate farm subsidy. Thus, all other factors remaining constant, the amount of farm subsidy disbursed is directly proposal to the farm production, and therefore, sustainability of food.

The quality of farm subsidy provided by the government does not necessarily guarantee food security in Transmara District. Thus, the attainment of food security in the District depends not only on the quality of farm subsidy but also on timelines, administrative costs in terms of storage and transport and adequacy of farm subsidies disbursed.

1.4 Recommendations

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

It was found that the farm subsidies were not being provided to the farmers on time. Hence, the government should try as much as possible to reduce the middlemen in so as to ensure that the farmers are able to receive the subsidies on time just after it has been released by the government.

Based on the aspect that not all the farmers get the opportunity to receive the farm subsidies, the government should come up with clear, open and transparent criteria that will be used for disbursing the subsidies to the farm beneficiaries that are in deed in deep need. Further, the government should also increase the number of the beneficiaries that get to have full access of the farm subsidies that they provide so as to increase the amount of crop produced within a given period.

The government through the Ministry of Agriculture in collaboration with the local authorities and farmers union if any 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.

The government, farmers associations and farmers need to join forces so as to work towards improving infrastructure in the remote areas. This will enable the farmers to have easy access to farm subsidies and incurring only a small cost of transportation.

Awareness needs to be created among the farmers on the importance of constructing permanent storage facilities over the temporary ones. As a result, NGOs, local authorities and farmers association need to come together and carry out road shows and campaigns that are geared towards creating awareness among the farmers.

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. Such policies should be geared towards encouraging stable and transparent policies and practices on fertilizer supply, markets, improve the overall business financing and risk management environment, improving the

environment for supply chain coordination and reducing fertilizer sourcing and distribution costs (e.g. infrastructure development).

It can further be recommended that complementary or alternative public expenditures should be mobilized to achieve national food security goals. For instance the government through the financial institutions may initiate cash transfer programmes so as to increase farm income and input usage, liberate the market and infrastructure development so as to establish strong, private sector-led input supply markets.

In the supply of farm subsidies, the government through the Ministry of Agriculture should try as much as possible to ensure that all the farmers in the beneficiary list receive the farm inputs with respect to their land needs hence not limiting them to a singularized mode of measurement across all farmers. This will enable those farmers with large tracts of land to have enough subsidies for their farms. Hence, improving the overall amount of crops produced in the periods.

5.5 Recommendations for Further Studies

This study recommends that further investigations need to be done on the role of government in ensuring sustainable food security in Kenya and alternative solutions to addressing the perennial problem of food security in Kenya.

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APPENDIX A

LETTER OF TRANSMITTAL

Ernest Kakula Muendo

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NAIROBI

Dear Participants,

Thank you very much for your willingness to participate in this survey. This questionnaire is meant for research on **the influence of farm subsidy on sustainable food security in Transmara West, Narok County by the Ministry of Agriculture**. 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 provided will 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,

ERNEST KAKULA MUENDO

APPENDIX C1: QUESTIONNAIRE FOR FARMERS

Dear Respondent,

I am a student at the University of Nairobi taking a degree in Master of Arts in Project planning and Management. You have been selected randomly to participate in this research on the Influence of Farm Subsidy on Sustainable Food Security in Transmara West District, Narok County. The information you provide is meant for academic purpose only. Thank you for your willingness to participate.

Section A: Background Information

1. Please indicate your Sex

a) Male

b) Female

2. Please state your current Age bracket?

Age Group	Tick
Below 18 years	
19-25 years	
26- 35 years	
36-40 years	
41 years and above	

3. Indicate your years of experience as a farmer

a) Below 2 years

b) 2- 5 years

c) 5-10 years

d) 10-15 years

e) 15-20 years

f) Above 20 years

Section B: Extent to which timeliness in release of subsidy to farmers influence the level of maize production

4. What is the best season for growing maize and other cereals in this place?_____

5. At what time of the year does the government provide subsidies in this area?

a) In time []

b) Late []

6. By use of a tick please indicate whether you strongly agree, (SA) agree, (A) disagree (D), Undecided (U), Disagree (D) or strongly disagree (SD) with the following statements regarding the effect of timeliness of subsidy of farm inputs on food security

	Statement	SA	A	U	D	SD
a)	It is important to receive subsidy in good time to match weather conditions					
b)	Cumbersome and time consuming disbursement procedures hinder farmers from planting on time					
c)	Access to subsidy of farm inputs is delayed					
d)	Delayed application of fertilizers hinders crop development					
e)	Disbursement of subsidy in this area is a slow process which takes a lot of time					
f)	Delays in the release of funds have led to delayed payments to input suppliers and service					
g)	Tendering process of farm input supplies is long, thus delaying the supplies					
h)	Delays in planting creates losses in both yields and income					

7. Please explain in your own words how timeliness factor in farm subsidy supply influences crop farming in this area

Section C: How the administration of (storage and transport) of the farm subsidy influence the level of farm production

8. Please fill in the table below relating to transport and storage cost you have incurred from 2008 -2011

Year	Transport costs incurred		Storage costs	Other costs(specify)
	Distance(Kms)	Costs(Kshs)		
2008				
2009				
2010				
2011				

9. What type of storage facilities do you have?

a) Temporary []

b) Permanent []

10. Which type of store do you have?

a) Granary

b) Silos

c) Others (specify): _____

11. Please indicate your response with regard to the influence of administrative cost (on storage and transport) on farm production.

Statement	SA	A	U	D	SD
The high administrative cost on storage and transport hinders the supply of farm inputs					
Poor infrastructure hinders the supply of farm inputs					
Lack of enough human labor to transport the subsidies hinders their supply					
Cost of transporting farm inputs is high					
There is need for a private involvement in the supply and storage of subsidies					
Some farmers travel to long distances to access the subsidies					
An inefficient delivery system impedes crop production					

12. Please explain how the administrative cost (of storage and supply) of farm inputs influences crop farming in this are: _____

Section D: Influence of the Amount of Farm Subsidy Disbursed on Maize Production

13. Please fill in the table with regard to the amount of seeds and fertilizers you have been using from the year 2008-2011:

Year	Amount used		Yield (Tick)		
	Seed	Fertilizer	Increased	decreased	The same yield
2008					
2009					
2010					
2011					

14. Is the amount of farm input subsidy provided by the government in relation to the following:

a)	Farm size	Yes	No	Comment
b)	Production value			
c)	Cost incurred in purchase and delivery			

15 a) Do you think the farm input subsidy given by the Government is enough?

b) Yes []

a) No []

Explain your answer

16. In your own words, please explain the influence of the amount of farm subsidy disbursed by the government on crop production in your area?

Section E: Influence of the Quality of Farm Subsidy on Maize Production

17. Please rate the quality of farm subsidies provided by the government in this area

- a) Poor () b) Good () c) Average () d) Not at all ()

18. By use of a tick please indicate whether you strongly agree, (SA) agree, (A) disagree (D), Undecided (U), Disagree (D) or Strongly disagree (SD) with the following statements regarding the influence of the quality of farm subsidies on crop production

	Statement	SA	A	U	D	SD
a)	Quality seeds are in short supply					
b)	Quality seeds is a determinant of productivity					
c)	There are no quality checks by the government on the farm input subsidies					
d)	Most Farmers do not care on the quality of seeds provided as subsidies due to ignorance					
e)	Farmers take on any type of seeds because of unavailability of the quality ones					
f)	Low quality seeds affects production negatively					
g)	Farm subsidies provided are vulnerable to pests and diseases					
h)	The type of input distributes is due to the price level in the market					
i)	Farm inputs provided are not environment friendly					

19. Please explain the Influence of the quality of farm input subsidy provided by the government on maize production in this area -

Section F: Influence of the type of farm subsidy supplied on maize production

20. Please fill in the table regarding the type of fertilizer and seeds you have used from the year 2008 to 2011.

Year	Fertilizer				Seed			
	Type (DAP/SSP)	Amount	Potential Bags/acr	Source GoK/Self	Type (Specify)	Amount	Potential Bags/acr	Source GoK/Self
2008								
2009								
2010								
2011								

21. Do you think the type of farm input supplied is favorable to the environmental conditions of this area?

Yes []

No. []

22. What is the influence of the type of farm inputs distributed by the government on crop production?

a) Negative []

b) Not at all []

c) Not sure []

23. Please indicate whether the following are adhered to during disbursement of the farm inputs

a) Provision of a range of seeds [____]

b) Assessment of the environmental needs [____]

24. Please indicate your response with regard to the influence of the type of farm input subsidy provided by the government on farm production

Statement	Yes	No	Not Sure
Use of unfavourable type of fertilizer causes soil degradation			
Unfavourable type of seeds hinders crop production			
Use of different type of inputs causes crop disparities			
Farmers hardly pay any attention to emerging micronutrient deficiencies which are affecting productivity, quality and efficiency of fertilizer use.			
mismatch of coupons and fertilizer types affects crop production negatively			

25. In your own words, how do you think the type of farm input subsidy provided by the government in this area influences crop production?

Section G: Measures to enhance Farm Subsidy

26. What measures do you think can be put in place to improve Farm Subsidy for Sustainable Food Security in Transmara West District?

Appendix C2: Interview Guide for Agricultural Officers

Dear Respondent,

I am a student at the University of Nairobi taking a degree in Master of Arts in project planning and management. You have been selected randomly to participate in this research on the Influence of Farm Subsidy on Sustainable Food Security in Transmara West District, Narok County. The information you provide in this interview is meant for academic purpose only. Thank you for your willingness to participate.

Section A: Background Information

1. Sex

- a) Male
- b) Female

2. Age

- a) 18-25 years
- b) 26-30
- c) 30-50
- d) Above 50

3. Academic qualification

- a. Certificate
- b. Diploma
- d) Degree

- e) Masters

4. Work designation?

5. What is your experience in this department?

- a) Less than one year
- b) 2-5 years
- c) 5-10 years
- d) More than 10 years

Section B: Influence of Farm Subsidy on Sustainable Food Security

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

7. Please explain the type of food storage facilities that are harbored by the residents?
(Temporary, permanent).

8. How do you think the administration cost (of storage and transport) hinders the supply of
farm inputs in this area? Please explain you answer.

9. 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.

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

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

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

13. What type of farm input does government provide in this area?

14. Do you think the type of farm input supplied is favorable to the environmental conditions of this area? Explain

15. What measures do you think can be put in place to improve Farm Subsidy for Sustainable Food Security in Transmara West District?

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 investigate the extent to which timeliness in farm subsidy provision influence sustainable food security in Transmara West District.	To what extent does timeliness in release of farm subsidy to farmers influence the level of maize production in Transmara West District.	Timeliness in release of farm inputs	Food security	Number of weeks before planting time(X) Number of maize bags harvested per acre(Y)	Weeks 90 kg bags	Ratio	Survey	Quantitative
2.	To establish how the storage and transportation costs of the farm subsidy influence the level of Maize production in Transmara West District	What is the influence of the mode of storage and transportation(administration) of farm subsidy on the production of maize in Transmara West District.	Administration(storage and transportation) costs of the farm subsidy	Food security	KShs spent on transportation and storage before inputs reach the farmers store(X) Gross margin of maize per acre.(Y)	Kenya shillings Kenya shillings	Ratio	Survey	Qualitative

3.	Investigate the influence of the amount of farm subsidy disbursed influence maize production in Transmara West District.	How does the amount of farm subsidy disbursed to farmers influence maize production in Transmara West District.	Amount of farm inputs given	Food security	Bags of fertilizer received and Kgs of maize seed received(X) Number of bags produced per acre(Y)	Number of bags given 90 kg bags	Ratio	Survey	Qualitative
4.	To determine how the quality of the farm subsidy given influence maize production in Transmara West District	To what extent does the quality of farm subsidy influence the maize production on Transmara west District.	Quality of farm inputs	Food security	Yield potential for maize seed given(X) Number of bags harvested per acre(Y)	Bags /acre 90 kg bags	Interval	Survey	Qualitative/ Quantitative
5.	To understand how the type of farm subsidy supplied influence maize production in	What relationship exists between the type of the farm subsidy given and maize production in Transmara West District.	Type of farm inputs	Food security	Seed and Fertilizer type given(X) Bags harvested per acre	Type 90 kg bags	Nominal	Survey	Qualitative/ Quantitative

Table 3.1.
Operationalization
of variables table
....Source:- Author

APPENDIX E

BUDGET

ITEM	COST (KSHS)
Research Assistant	12,000
Piloting and data collection	15,000
Stationary	20,000
Typing and Photocopying	15,000
Printing and Binding	10,000
Miscellaneous	5,000
	<hr/>
TOTAL	77,000
	<hr/>

APPENDIX F

ACTIVITY SCHEDULE

The work shall be done in 2012 and the activities are summarized below;

	Activity/ Month	March	April	May	June	July	August	September	October	November
1	Proposal writing									
2	Proposal correction									
3	Proposal presentation									
4	Submission for approval									
5	Permission to collect data									
6	Pre-testing									
7	Data collection									
8	Data analysis									
9	Thesis writing									
10	Thesis Presentation									
11	Thesis final correction									
12	Thesis submission									