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Impact of Agricultural Reform Measures on Maize Production among Small Scale Farmers: The Case of Western Province of Kenya

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Authors' contributions

This work was carried out in collaboration between all authors. Author MAAO designed the study, wrote the protocol and authors NJK, DOW and WAS supervised the work. Author MAAO and carried out all laboratories work and performed the statistical analysis. Author MAAO managed the analyses of the study. Author MAAO wrote the first draft of the manuscript. All authors managed the literature searches and edited the manuscript. All authors read and approved the final manuscript.

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ABSTRACT

The introduction of SAPs (Structural Adjustment Programmes) and trade liberalisation resulted in agricultural reforms in Kenya and other developing countries. Hence the Kenya government no longer gives incentives to small scale farmers. The study therefore sought to find out the impact of agricultural reform measures put in place to increase maize production in the agricultural reform era in Western Province of Kenya. The study used Ex-post facto research design via cross sectional survey. Busia, Bungoma, Mt. Elgon and Lugari districts were purposively selected to represent Western Province. Two divisions from each of the four districts were selected by simple random sampling. For uniformity purposes 200 small scale farmers were selected from focal areas through

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systematic random sampling hence ensuring that they all had been exposed to extension staff. Four key informants were sampled purposefully based on their positions of authority. In addition, 52 extension staffs were sampled through systematic random sampling. The small holder farmers were interviewed with the help of interview schedule containing open and closed ended questions. Data were analyzed using descriptive statistics. The study revealed that the government's support to the small scale farmers was minimal, and that there were changes such as liberalisation of the input market & National Cereals and Produce Board that did not favour the small scale farmer and this might have discouraged them from increasing maize production. Agricultural reform measures put in place to encourage small scale farmers in Western Province to increase maize production has changed over the years. However, the small scale farmers were either not aware of these changes or were not able to take advantage of these changes. AS a result, the small scale farmers did not take charge of factors affecting production and marketing of their maize. The study recommended that the extension staff should teach the small scale farmers on the changes that have been brought about by SAPs and market liberalisation and how to take advantage of such opportunities such as form strong common interest groups.

Keywords: Agricultural reforms; reform measures; Kenya; small holder farmers.

1. INTRODUCTION

Since independence the government of Kenya has placed great emphasis on agricultural production. The government aimed at improving productivity of small scale farms through incentives such as agricultural credit, extension service, and provision of training, improved input supply and improved markets, GOK [1,2,3]. In addition annual price reviews were carried out whose results were meant to assist farmers to meet the increasing cost of agricultural inputs. Furthermore, statutory marketing boards were set up to purchase, store and sell agricultural produce in order to smooth out price fluctuations and stabilise prices to the advantage of both consumers and producers, Karigi [4].

With the introduction of SAPs (Structural Adjustment Programmes) and trade liberalisation which resulted in agricultural reforms in Kenya and other developing countries, the Kenyan government no longer gives most of these incentives to small scale farmers. Though the government of Kenya has put in place crops act whose objective is to accelerate the growth and development of agriculture in general, enhance productivity and incomes of farmers and the rural population, improve investment climate and efficiency of agribusiness and develop agricultural crops as export crops that will augment the foreign exchange earnings of the country, through promotion of the production, processing, marketing, and distribution of crops in suitable areas of the country (Republic of Kenya), [5] the reforms remain. In fact since 1990 the government has undertaken considerable macro and sectoral policy and institutional reform measures. These measures include the removal of foreign exchange controls, liberalisation of interest rates, decontrol of petroleum and agricultural commodity prices, liberalisation of imports and exports, rationalisation of tariffs, and civil service and parastatal reforms (MARD (Ministry of Agriculture and Rural Development), [6]. Though these reforms were meant to level the play field to the advantage of small scale farmers, they resulted in high production costs among small scale farmers due to high costs of inputs especially fertilisers. In addition, there are poor and long marketing chains, low levels of mechanisation and high transport costs (Republic of Kenya), [7]. These changes may have affected the maize production among small scale farmers. In fact currently maize production in Kenya is below the country's consumption requirements (Republic of Kenya) [7,8].

1.1 Study Objective

The study objective was therefore to look at the impact of Reform measures on maize production among small scale farmers in Western Province of Kenya. Comparison of how the farmers in the different districts viewed these reforms were also considered.

2. METHODOLOGY

Ex-post facto research design was used via a cross sectional survey. This was because the study used naturally occurring treatments on subjects having a self-selected level of the independent variable [9,10].

The study was conducted in Western Province which is administratively divided into eight districts as shown on Fig. 1. The districts included Busia, Bungoma, Kakamega, and Lugari: Vihiga and Mt. Elgon. The Province covers an area of 8436 Km2 out of this 6670 Km2 has potential for agriculture of which, 3591 Km2 is cultivated for various crops. Rainfall is bimodal. The long and short rains come in March-May and August-November periods, respectively. Annual rainfall ranges from 900 mm in Busia to 2100 mm in Bungoma [11].

The target population was made up of small scale farmers in Western Province. The accessible population is as shown on Table 1.

Busia, Bungoma, Mt. Elgon and Lugari districts were selected through purposive sampling because Busia District had the lowest average maize yields (7 bags per acre) in the province while, Lugari District experienced the highest average maize yield (18 bags per acre) in the province. Bungoma and Mt. Elgon districts were in-between in terms of maize yield [12,13]. The four districts also represented Western Province in terms of all the Agro-ecological zones that exist in the province and therefore, results obtained could be generalized to the whole province.

Table 1. Showing the accessible population and population at district levels

District	Accessible population
Lugari district	41,809
Bungoma district	158,370
Mt. Elgon district	19,746
Busia district	136,736

Two divisions from each of the four districts were selected by simple random sampling. The study divisions were Bumula and Webuye in Bungoma District; Kaptama and Kapsokwony in Mt. Elgon District; Funyula and Butula in Busia District and Lugari and Likuyani in Lugari District.

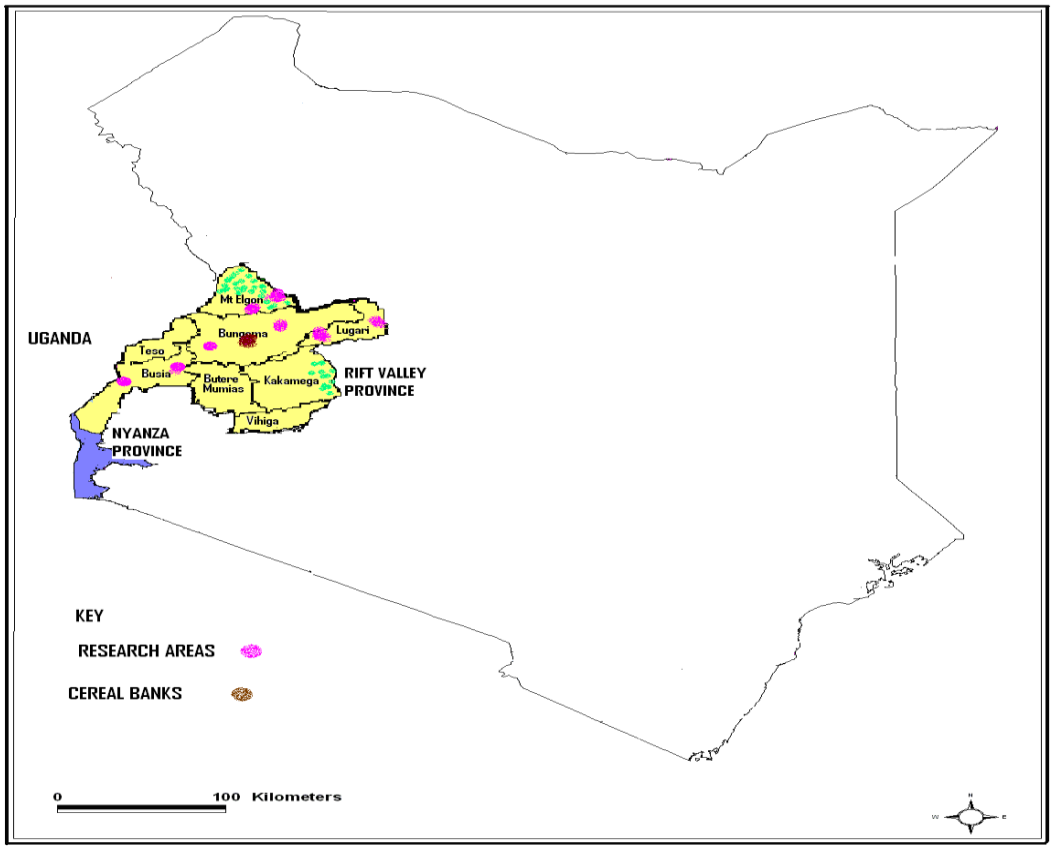

Fig. 1. Map showing the districts in western province of Kenya

Fig. 2. Enlargement of the western province of Kenya

For uniformity purposes the small holder farmers were selected from focal areas through systematic random sampling thus ensuring that they all had been exposed to extension staff. At the time of data collection, the extension staff had trained the farmers in one focal area per division and had moved to the next. The focal area approach which is under the National Agriculture and Livestock Extension Programme (NALEP) aims at improving livelihoods of the poor rural households (MOA & ML&FD,) [14]. In the focal area approach the extension staffs works in one area of approximately 400 farmers per year. The focal area is taken as a demonstration site where farmers from the rest of the division can learn latest technologies, Baiya [15]. The key informants were purposefully sampled due to their positions of authority.

The sample size was arrived at using the following formula:

$$n = NC^2 \div C^2 + (N-1)e^2$$

(*note:* n=sample size; N=population size; C=Coefficient of variation which is 30%; e=margin of error which is fixed between 2-5%). The study sample was calculated at 25% coefficient of variation and 5% margin of error, Nassiuma [16].

For the purpose of generalizing the results to Western Province, twenty five percent coefficient of variation was used to ensure that the sample was wide enough. Five percent margin of error was used because the study was an ex-post facto survey. In ex-post facto survey the independent variables are not be manipulated hence necessitating relatively higher margin of error. The study sample is shown in Table 2.

The small scale farmers and extension staff were selected through systematic random sampling from sampling frames that were obtained from the extension staff offices.

Four key informants were interviewed in order to generate additional information and clarify issues on the reform measures that had taken place. The key informants included the Provincial Director of Agriculture and Livestock Extension, the Provincial Crops Officer, an officer in position of authority in Agricultural Finance Corporation and an officer in position of authority at the National Cereals and Produce Board, Western Province. The small scale farmers were interviewed with the help of interview schedules and the extension staff were asked to fill questionnaires.

3. RESULTS AND DISCUSSION

For developing countries, including kenya, agriculture is overwhelmingly important for their economies and livelihoods (murphy, 2001; ministry of agriculture (MOA) & ministry of livestock and fisheries development (MLFD [17]; MOA [14]). The agricultural sector has been affected by agricultural reforms which stemmed from world trade organisation (WTO) agreement on agriculture. The agreement has legitimized

Table 2. Total number of subjects by category from which the sample was drawn

Category	Number of subjects	Sample size
Extension staff in the province	832	52
Household heads in Busia district	136,736	50
Household heads in Lugari district	41809	50
Household heads in Bungoma district	158370	50
Household heads in Mt. Elgon district	19746	50
Key Informants		4
Total	357,493	256

the use of subsidies in developed countries, while narrowing the options available to developing countries which are expected to compete in an increasing global market, Woomer and Mukhwana [18]. The structural adjustment policies attempted to abolish state controlled price levels on agricultural products and to abolish state controlled marketing boards, Nyangito & Karugia [19]. These were meant to limit government interference in agriculture and hence increase agricultural production. Kenya's agricultural sector has undergone some market liberalization, kodhek, [20]; Nyangito & Karugia [19]. The government has moved out of setting prices, imposing controls and subsiding parastatals to ensure fair competition with the small scale farmers. This paper therefore discusses the impact of the reform measures on maize production among small scale farmers: the case of western province of Kenya.

The small holder farmers were asked whether they thought that assistance from the government to small scale farmers had changed in the past two decades under agricultural reforms. A high percentage (60.6%) said that they had changed, 39% said that they had not changed while 0.4% said that they were not sure.

When asked what aspects of government assistance to small scale farmers had not changed, they said that AFC (Agricultural Finance Corporation) still charged high interest rates for acquired loans, demanded collateral and did not give loans to small scale farmers who had less than five acres of land under maize production. The small holder farmers also said that there were few extension staff, research dissemination was still poor and that there were no free inputs given to farmers. On marketing, the small holder farmers reported that payments from the National Cereals and Produce Board were still late and that the farmers were still being taken advantage of by middlemen. In addition, the small holder farmers claimed that there were no markets close to them.

Similarly, the small holder farmers said that they thought that assistance from the government to the small scale farmers had not changed because the prices of inputs were still high. The small holder farmers added that the government had not controlled fake seed and that farmers did not practice what they had been taught due to lack of resources. According to Muchoge and Zziwa [21] the Kenyan government planned to improve animal and crop protection, and to improve access to quality farm inputs. These have not been realised in Western province of Kenya.

A key informant from the Ministry of Agriculture concurred with the farmers that there was a lot of fake seed in the market. The informant asserted that some areas had experienced crop failure due to fake seed. The fake maize seed resulted from liberalisation of the input market whereby Kenya Seed Company was no longer the only company providing maize seed to farmers. The informant said that though the Kenya Plant Health Inspection Services (KEPHIS) was expected to check the seed quality, the organisation was limited by shortage of staff and other resources. For example one office made up of twenty one officers covers the Western region which is made up of Rift Valley, Western, and Nyanza Provinces. The Western region offices are situated at the Busia Border, Malava Boarder, Nakuru and Kisumu and therefore were not able to cover the farmers adequately.

To ensure quality seed is available to farmers. All stockists have to make their application through the Ministry of Agriculture. The applications are then forwarded to KEPHIS for approval. In addition, in case of crop failure resulting from the fake seed, the farmers report to the extension staffs who in turn inform KEPHIS, which may sue the seed company. The penalty was however, too lenient, lamented the key informant. In the past the company would be charged Ksh. 4,000 or one month imprisonment. This was reviewed in 2003 to Ksh. 500,000 or six months

imprisonment. This the key informant felt was not harsh enough for a company that may have caused crop failure, maybe to a whole location and many farmers may have lost thousands of shillings.

The small holder farmers, who reported that government assistance to the small scale farmers had changed, cited both positive and negative changes. Those small holder farmers who cited positive change said farmers' yields had improved and that there were improved marketing channels and improved roads. In addition, the farmers had been assisted to get loans and that the government had licensed more farm input stockists. The small holder farmers further said that there were more demonstrations by extension staff, more farmers were adopting recommended practises and that inputs were being sold in smaller quantities, which the farmers could afford to buy.

The small holder farmers who cited negative change reported that there were few extension staffs, credit conditions had tightened and the government had stopped providing inputs to farmers and that the government no longer regulated prices of farm inputs. From the small holder farmers responses it was evident that the government's support to the small scale farmers was minimal, and that there were changes that had occurred that did not favour the small scale farmer and this might have discouraged them from increasing maize production. The farmers in Western province did not seem to be aware of the agricultural reform policies that required them to take charge of production and marketing of their maize.

Cross tabulations were carried out to compare the responses of the small holder farmers from the study districts as shown in Table 3. The results indicated that 27.6% of small holder farmers from Lugari District reported that reform measures for small scale farmers had not changed. They argued that this was because AFC loan conditions were still tough and that no loans were granted to small scale farmers of less than five acres of land under maize production. Similarly, 14.8% of small holder farmers from Bungoma District and 13.8% small holder farmers from Lugari District had not received any assistance from the government.

The study further sought to find out whether the government had encouraged farmers in the study districts to increase maize production. Most of the small holder farmers (60.9%) reported that the government had not encouraged them to increase maize production. In fact only 38.3% reported that the government had assisted them in increasing maize production and less than one per cent said that they were not sure if the government had encouraged them to increase maize production or not.

The responses on whether the government had assisted farmers in Western province to increase maize production varied from district to district. A high percentage (58.6%) of small holder farmers from Mt. Elgon District said that they had been assisted by the government to increase maize production while half the small holder farmers from Bungoma District indicated that the government had assisted them. On the contrary, most of the small holder farmers from Busia District (66.1%) and Lugari District (87.1%) argued that they had not been assisted by the government to increase maize production.

The small holder farmers who reported that the government had assisted them to increase maize production said that the government had done so through provision of extension service and provision of loans through the Agricultural Finance Corporation (AFC). In addition, they reported that the government had improved marketing channels through the National Cereals and produce board and provision of a variety of farm input stockists. Few small holder farmers (1.3%) claimed that there were improved roads.

Table 3. Reform measures that have not changed as perceived by small holder farmers in the study districts

	AFC conditions still Tough	No assistance from government	Fewer extension staff	Prices of inputs are high
Bungoma	1.9%	14.8%	1.9%	11.1%
Lugari	27.6%	13.8%	0.0%	15.5%
Mt. Elgon	0.0%	1.8%	28.1%	0.0%
Busia	7.0%	1.7%	1.7%	27.6%

The highest percentage (31%) of small holder farmers who alleged that the government had assisted them by providing extension service were from Bungoma District. It is interesting to note that few small holder farmers from Lugari District (5.0%) and Mt. Elgon District (8.6%) viewed the deployment of the extension staff in their area as assistance from the government as shown in Table 4.

This could be as a result of new approach taken by the ministry of Agriculture Livestock and Fisheries that farmers have to demand for services. Hence the extension staff rarely visited farmers' farms but the farmers were expected to visit the extensions staff's offices, or the farmers may form groups which the extension staff would visit to advice the farmers. If farmers did not take the initiative to visit the extension staff in their offices or were not members of farmer groups then they may not receive the services of the extension staff.

The results further revealed that 11.7% small holder farmers in Lugari District and 13.0% small holder farmers in Mt.Elgon District reported that the government had improved the marketing channels as shown in Table 4. This could be because a high percentage of small holder farmers in Lugari District (51.7%) and Mt.Elgon District (22.4%) realised more than sixteen bags of maize per acre and therefore, they sold to National Cereals and Produce Board, which was a government institution. On the other hand, small holder farmers from Bungoma District and Busia District realised low maize yields and therefore, did not sell their maize to the national cereals and produce Board.

In addition, the results revealed that a higher percentage of small holder farmers from Mt.Elgon District (36.2%) said that the government had assisted in encouraging them to increase maize production by providing farm-input stockists. This could be as a result of the government liberalising marketing of farm inputs, resulting in many farm-input stores being opened up in various districts. One of the reasons why farmers in Mt.Elgon District viewed provision of farm inputs as an encouragement from the government could be because more small holder farmers had access to farm input stores. According to CNFA & AGMARK [22] population per permanent stockist in Mt.Elgon District was as low as 1:4,333 as compared to 1:5,252, 1:7,272 and 1:12,625 in Bungoma, Lugari and Busia districts, respectively.

The small holder farmers who claimed that the government had not assisted them to increase maize production were asked how they would like the government to assist them. A high percentage of small holder farmers (31.5%) suggested that the government ought to reduce the price of farm inputs, 28.3% said that the government should provide soft loans to farmers or simplify AFC conditions. In addition, 10.3% said that the government needed to assist the farmers in marketing their maize, 4.3% proposed that the government should post more extension staff in the area, while 25.6% did not respond to the question.

In further attempting to understand the influence of agricultural reforms and the reform measures on maize production in Western Province of Kenya, the extension staffs were asked about the changes that had taken place in the agricultural sector and how these changes had affected maize production. The results revealed that lack of reform measures had resulted in factors that had hindered maize production in Western Province of Kenya as shown in Table 5.

Table 4. Responses on assistance given by the government to encourage Increased maize production in the study districts (%)

	Bungoma	Lugari	Mt.Elgon	Busia
Provision of extension service	31.0%	5.0%	8.6%	22.4%
Provision of AFC loans	12.1%	1.7%	3.4%	0.0%
Improving marketing channels	1.7%	11.7%	13.0%	6.8%
Provision of farm input stockists	1.7%	1.7%	36.2%	0.0%
Improved roads	0.0%	0.0%	5.2%	3.4%

Table 5. Factors related to reform measures hindering maize production in western province of kenya as reported by extension staff

Factors hindering maize production	Percentage
Poor marketing prices	33.3
Lack of organised markets	51.2
Fake inputs	27.4
High input prices	61.9
Poorly managed credit facilities	71.4
Unfriendly credit conditions	9.5
Lack of sudsidies	7.1

Currently, in Western Province, like in the rest of the country, the government does not control prices or marketing of fertilisers and has abolished state controlled price levels on agricultural products. In addition, the government has restructured state controlled marketing boards, Kodhek, [20]. The findings show that maize production respond positively to its output price, development expenditures in agriculture, maize sales to marketing boards,, inflation, growth in per capita GDP, liberalisation, governance reforms of 2003-2008, favourable weather and availability of cheap fertilisers. Output of the crop respond negatively to increase in average fertiliser price.

Similarly, a high percentage of extension staff (84.5%) argued that either poor prices were offered or that there were no organized markets for maize. This was because the government did not set the price at which maize was bought nor did the National Cereals and Produce Board buy the maize from the farmers. These resulted in the farmers being forced to look for their own markets which most of the time was made up of middlemen who came to the farm gate. In addition, farmers sold their maize to the local market which usually was flooded with maize during the harvesting time.

Furthermore, due to liberalisation of trade the government allowed maize to be imported from neighbouring countries, which was sold at low prices, hence, giving maize farmers stiff competition for the maize market. The situation was made worse when farmers sold their maize immediately after harvesting because they needed the money due to their high poverty levels and could not afford to stock their maize and wait for higher prices

It was worrying to note that a relatively high percentage of extension staff (27.4%) reported that there were fake inputs such as seeds and fertilisers in the market as shown in Table 5. This was a problem that should be taken seriously by the government.

About 41% of the extension staff interviewed suggested that poor roads also hindered maize production in Western Province. This was because poor roads meant that farmers would spend more money on transport, thus resulting to low profits. Farmers are usually discouraged from indulging in enterprises with low returns as indicated by Guerin and Guerin [23]. Furthermore, 32.5% of the extension staff reported that the farmers were demoralised by the changes that had taken place in the agricultural sector, including the presence of middlemen whom farmers felt were exploiting them.

Though the extension staff cited a number of factors that hindered maize production from agricultural reform era, they also reported a number of factors that had favoured maize production in the same era. This is as shown in Table 6.

It is important to note that there were a number of negative effects of agricultural reforms on maize production as seen in Table 5. These results are supported by Kodhek [20] who pointed out that though market liberalisation is not complete, a number of sectors are not finding it to their liking. Damon [24] further argued that though the proponents of trade liberalisation promised cheaper foods and food security, this has not been the case. The changes that have taken place in the agriculture sector due to SAP and trade liberalisation have also affected the efficiency of extension staff in assisting farmers.

Table 6. Factors that encourage maize production in western province

Factors that encourage maize production	Percentage
Farmers are able to choose from various maize varieties	28.6
Farmers are able to sell green maize	14.3
Farmers are seeking out extension staff	6.0
Farmers can sell their maize anywhere	15.4
Farmers Can afford to buy inputs	9.0
Focal area approach has promoted maize production	7.7
Provision of extension staff	12.2
Revived AFC,NCPB and KFA	18.9

4. CONCLUSION AND RECOMMENDATIONS

Reform measures put in place to encourage small scale farmers in Western Province to increase maize production has changed over the years. For example, de-subsidisation of input prices, and liberalisation of input and product markets, among other changes. These were meant to improve the maize market therefore enabling the farmer to realise higher profits. However, the small scale farmers were either not aware of these changes or were not able to take advantage of these changes. As a result maize production in the country has continued to decline and more small scale farmers whose livelihood is mainly maize production have continued to be impoverished.

4.1 Recommendations

The government should increase the number of extension staff and facilitate them to reach more farmers with improved agricultural packages and make follow ups.

The extension staff should teach the small scale farmers on the changes that have been brought about by SAPs (Structural Adjustment Programmes) and market liberalisation and how to take advantage of such opportunities such as form strong common interest groups.

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COMPETING INTERESTS

Authors have declared that no competing interests exist.

REFERENCES

1. GOK. National development plan 1965-1970. Nairobi, Kenya: Government Printers; 1965.
2. GOK. National development plan 1974-1978. Nairobi, Kenya: Government Printers; 1974.
3. GOK. National development plan 1989-1993. Nairobi, Kenya: Government Printers; 1989.
4. Karigi SN. External shocks and adjustment policies in the Kenyan economy. A computable general equilibrium analysis special reference to the agricultural sector. Unpublished PhD. Dissertation; 1998.
5. Republic of Kenya (2013a). Crops act; Kenya Gazette Supplement. Nairobi, Kenya: Government Printers; 2013.
6. MARD. Department of Agriculture Western Province 2001 annual report; 2001.
7. Republic of Kenya. Agricultural sector development strategy 2010-2020. Nairobi, Kenya: Government Printers; 2010.
8. Republic of Kenya (2013b). Ministry of Agriculture Food Security Assessment Report. Nairobi, Kenya: Government Printers; 2013.
9. Kathuri NJ, Pals, DA. Introduction to educational research. Njoro, Kenya: Educational Media Centre, Egerton University; 1993.

10. Borg, WR, Gall, MD. Education research: An introduction. New York: Longman Inc; 1993.
11. MARD. Department of Agriculture Western Province 2001 annual report; 2002.
12. CBS (2001a). Economic survey. Nairobi, Kenya: Government Printers; 2001.
13. MOA. Ministry of Agriculture, Western Province 2006 annual report; 2006.
14. MOA and MLFD. Impact assessment NALEP Phase 1. Nairobi, Kenya: Ministry of Agriculture and Ministry of Livestock Development; 2006.
15. Baiya FM. Focal area extension planning: National agriculture and livestock extension programme field guide notes. Nairobi, Kenya, Government Printers; 2003.
16. Nassiuma DK. Survey sampling: Theory and methods. Njoro, Kenya: Egerton University Press; 2000.
17. MOA and MLFD. Strategy for revitalising Agriculture. Nairobi, Kenya: Government Printers; 2004
18. Woomer PL, Mukhwana EJ. Working with small holder farmers to improve maize production and marketing in Western Kenya. Uganda Journal of Agricultural Sciences. 2004;9:491-500.
19. Nyangito HO, Karugia JT. The impact of recent policy changes on the agricultural sector and public agricultural research in Kenya; 2006.
Available: http//:www.Glob_cho5.pdf
20. Kodhek GA. Contemporary issues determining the future of Kenyan agriculture: An agenda for policy and research; 2005.
Available:http://www.yahoo.Agenda_pol_resrch(1).htm
21. Mochoge B, Zziwa S. Agricultural and food security challenges in the IGAD region. A paper presented at the NEPAD/ IGAD regional conference Agricultural Successes in the Greater Horn of Africa. Nairobi, Kenya; 2004.
22. CNFA and AGMARK. Distribution and characteristics of stockists of agricultural inputs in Western Kenya: A survey report funded by Rockefeller Foundation; 2005.
23. Guerin LJ, Guerin TF. Constraints to the adoption of innovations in agricultural research and environmental management: A review. Australian Journal of Experimental Agriculture. 1994;34(4).549-571
24. Damon M. The Zest declaration on trade liberalization and the right to food. Public Policy Liason Office of South African Churches, Johanesburg, South Africa; 1999.

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