Review of Agricultural Extension Interventions in Unlocking Agriculture Potential through Medium Sized Farms, Kenya

Technical Report to Equity Group Foundation, Agriculture Pillar

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December 2014

Executive Summary

The rural population of semi-arid lands in Kenya face multiple challenges that result from population growth, poor markets, land use and climatic changes. In particular, subsistence oriented farmers face various risks and opportunities in their attempt to secure their livelihoods. Research programmes have been initiated nationally; regionally and internationally to breed and produce improved value chains. However, this has not achieved much impact in terms of information and technology transfer at both smallholders' and medium size farmers' hence poor adoption rates and minimal yields and income abide. These uneconomical yields gap between what is achieved in research stations and farmers' fields' poses food security concerns on the future of African agriculture without substantial investments in participatory extension approaches. The current report therefore presents literature review on extension approaches on promotion, productivity and commercialisation of various value chains.

The overall objective of the report was to review barriers and opportunities that exist in agricultural extension approaches in enhancing production and commercialiation of various value chains. Further, to identify alternative agricultural extension models among other stakeholders. Recommendations are further presented at the end of the report. Information was gathered through extensive literature review. Further, a semi-structured questionnaire was used to collect data on various extension models employed by government and private sector in information and technology transfer.

The report will build on the existing knowledge and inform extension service providers' in County government, private, inputs companies, international and national government on effective models of addressing food security and income generation among medium size farmers and other stakeholders across various value chains.

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Introduction

Background Information

Agriculture has wide ranging global impacts which extend to economic growth, poverty reduction, food security, livelihoods, rural development and environment management (World Bank, 2007). The Green revolution in Asia led to modernization of farming practices in twentieth century. The revolution resulted into improved agricultural yields substantially and raised various national production and food security (IFAD, 2001).Van den Berg and Jiggins, (2007) however highlighted two challenges associated with the green revolution. The first challenge was that poor farmers were left behind, particularly in sub-Saharan Africa by limited modernization approaches. Secondly, technologies promoted among farmers were not appropriate to the challenges facing smallholders in the African context, particularly women farmers, illiterate and special categories of farmers.

The rush for African land acquisition by middle economy class, politicians and foreign investors in the wake of the 2008, has contributed to food supply spike drawing to considerable attention to the availability of land for African agriculture (Schoneveld, 2014). Jayne *et al* (2014) documented rise in land acquisitions by relatively well-off urban and rural people who make up a significant portion of the rapidly expanding class of emergent or medium-scale local farmers. The current investors in medium size land have manifested a major role in land acquisitions and investment in Zambia, Kenya, and Ghana. These acquisitions have significantly affected the amount of potentially available cropland (PAC) for large scale and medium size farm use and expansion. Further, the rise of land rental markets has provided some potential for the youth to access land through renting or leasing for agricultural productivity. The current system of leasing land generally involves providing equivalent of one-third or more of the crop proceeds to the landlord. This systems call for greater cost benefit analysis for tenants to realize productivity and make a reasonable livelihood and income generation by renting land (Jayne *et al.,* 2014).

In earnest to scale up productivity, income generation and food security, there is need for immediate need in paradigm shift in terms of land acquisition and extension services provision to primary producers in the context of a rapidly changing food economy and globalization. Agricultural extension programmes are key policy instruments used to foster agricultural productivity in many countries. It is important to note that information and

knowledge transfer are important factors for accelerating agricultural development through appropriate production planning, adoption, management for developing to countries realize their full potential (Pontius, et al, 2002) . Agricultural extension services play an important role in ensuring information flow across the chain, thereby reducing uncertainty and enhancing the performance of the whole agricultural supply chain system.

A general consensus exist that extension services, if properly designed and implemented, improves agricultural productivity, Romani (2003). Agricultural extension services provide farmers with important information, such as patterns in crop prices, new seeds varieties, management practices with respect to crop cultivation and marketing, and training in new technologies. Extension services improve the knowledge base of farmers through means, such as demonstrations, model plots, specific training and group meetings. Exposure to such activities is solely intended to increase the ability of farmers to optimize the use of their resources and ultimately increase crops yields. Ideal extension service provides feedback mechanism from the farmers to the research centers (Katz, 2002).

1.2 Problem Statement

Kenya's agricultural extension services are characterized by multiplicity of players. There are myriads of challenges involved with each of the extension service provider (Evenson and Mwabu, 1998). The main extension service providers include; public extension sector under ministry of agriculture, private extension providers under various cash crops programmes, Non-governmental organizations (NGOs) and farm inputs and agro-chemical companies (Munyua, 2010). Linkages between these actors are weak and each actor is driven by its own motives and interest, some of which are conflicting.

There exists a dearth of skewed documented research information on agricultural extension support on production and commercialisation. However, the skewed research and extension approaches have led to negligence of various value chains. In earnest to bridge the existing research and extension gap, demand for research on production and commercialization of these orphaned value chains through agricultural extension approaches has been accelerated over the last two decades in research centres and universities (Erbaugh, et al., 2010).

The current global urbanization and population explosion calls for proper information flow on production and commercialization of improved value chains through extension service.To

achieve this, the extension services need a new approach that focuses on alternative models of information dissemination. This is because the extension service remains poorly developed and fragile. This report therefore presents barriers as well as opportunities to enhance medium size land farmers' reception of information in order to address production and commercialization of value chains.

There exist policy deficiencies on defined mechanism on how to involve farmers in designing agricultural extension programmes to suit their unique medium size land farmer's needs in Kenya. Poor linkages and coordination has been noted in farmer's participation particularly in agricultural extension in the current devolved government system (Karembu, 2011). The government of Kenya has had various interventions in revitalization of extension services through programmes like National Agricultural Livestock Extension Programme (NALEP), Training and Visits (T&V), Participatory Rural Appraisal (PRA), Rapid Results Initiative (RRI) and Farmer Field Schools (FFS), Carmen and Keth (1994). Farmer Field Schools (FFS) is the latest approach that draws on participatory methods, both in terms of its bottom-up focus, and in terms of farmer experimentation and building problem solving capabilities (Khisa, 2004).The method empowers farmers to handle their own on-farm decisions, using experiential learning techniques developed for non-formal adult education procedures.

1.3 Objectives

The overall objective of the report was to review barriers and opportunities that exist in agricultural extension service provision . Further, identify alternative agricultural extension model for up scaling production of variuos enterprises among midium size farms.

Specific objectives:

1. To review exiting literature on agricultural extension approaches in the production of various value chains.
2. To review various stakeholders role in agricultural extension across various value chains.
3. To identify alternative agricultural extension model in production and commercialization of various value chains.

1.4 Agricultural extension challenges among medium size farmers

Numerous complexities arise when dealing with medium size farms that current extension models do not address. Medium size farm have a variable level of sophistication and experience of which some use advanced machinery, while others are subsistence. Medium size farms holders suffer a diverse set of challenges, requiring a broad and evolving set of interventions to draw from both extension and other technical sectors. Each farm is different in nature and therefore requires an individualized combination of interventions to strengthen and scale up the agribusiness.

The role of extension organizations is to help farmers in terms of upscale their potential. Further, farmers share technologies or new farming systems, gain access to relevant information from variety of information sources, evaluate and interpret this information for their own situation, and to learn from their experiences (Quion, et al, 2001.) Extension agents tend to work very closely with middle income farmers and pay little attention to resource-poor. This is because the criteria used to evaluate performance of extension agent are based on the number of farmers adopting the technology packages in their mandate area. In the majority of countries of sub-Saharan Africa, farmers show lack of confidence in extension workers (Dixon, 2010).

In earnest to address these challenges, Equity Group Foundation agriculture pillar has deployed an experienced team of field officers and managers with the capabilities to diagnose challenges across value chains, both crop and livestock, and level their of sophistication. These interventions are proposed to unlock the limited practical training and dissemination tools required by potential farmers. The team has the opportunity to provide appropriate records management skills and unlock challenges in accessing quality markets.

1.5 Extension Policy challenges facing extension in Kenya

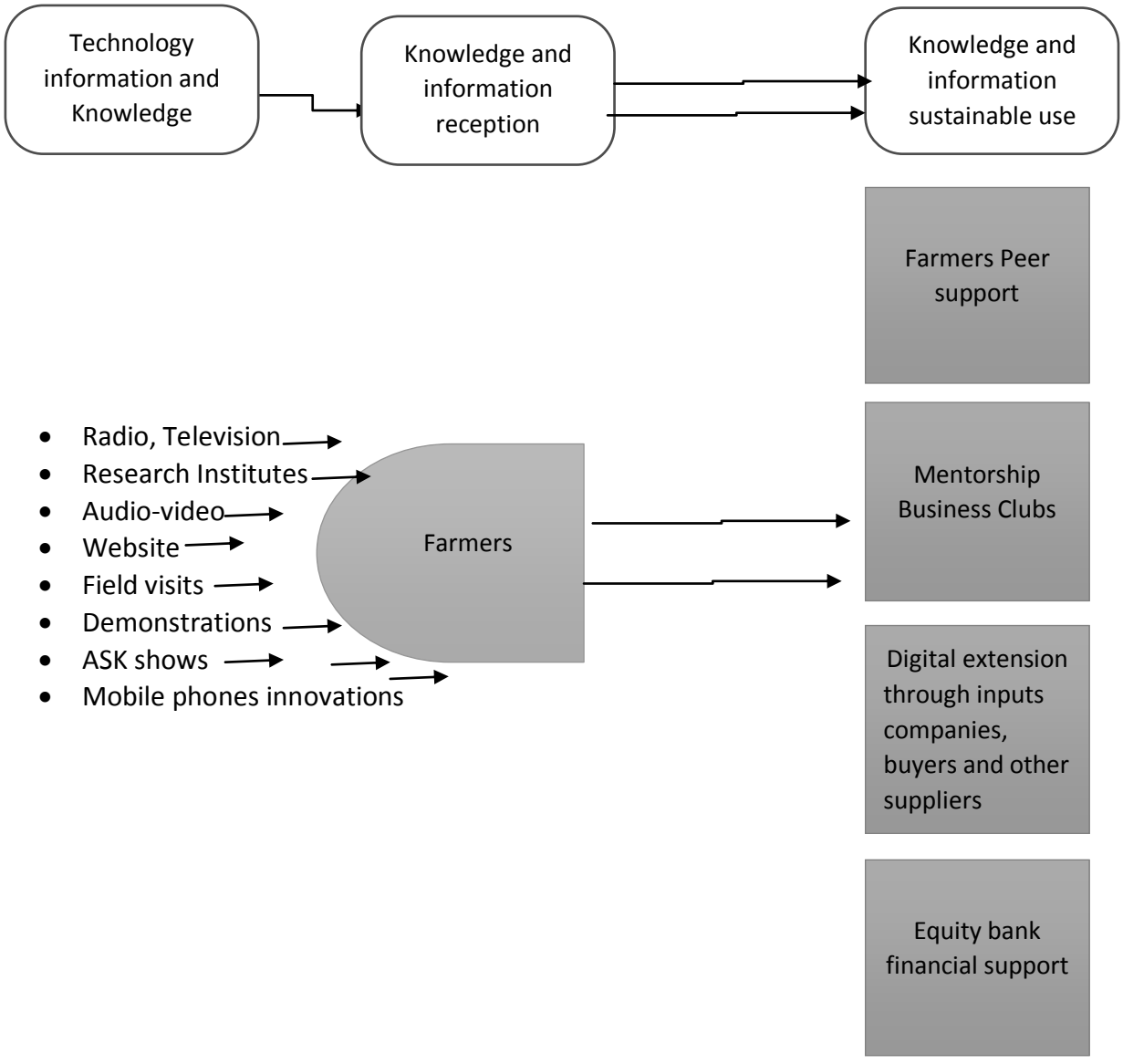
Agricultural extension policy in Kenya has suffered the following setbacks; aging and reduced staffing and funding for operations, lack of participatory technology development, and poor packaging and information dissemination. The policy lacks the capacity to control conflicting messages to the farmers, such as unnecessary competition, duplication of efforts, and general lack of synergy among these extension providers in Kenya (Kibbet et al, 2006).

1.6 Attributes of alternative agricultural extension model(s)

The report envisions offering an alternative extension model that can systematically scale up operations, monitor and support a farmer through implementation. It envisages individualized farm-level assessment of value chains and barriers to profitability and growth. The alternative model brings in training of managers and staff on agribusiness, production, fundamentals and robust training manuals both in digital via mobile phones and print forms. The alternative model will implement of paper-based and electronic records system and implementation and peer support through small working groups. The model will promote market and collaboration opportunities and ongoing training through Business Groups.

There illustration below indicates envisioned agricultural extension ecosystem.

1.7 Envisioned agricultural extension ecosystem among medium size farms



2.0 Review of existing agricultural extension approaches in Kenya and World wide

2.1 Development and growth of Agricultural Extension in Kenya

There are numerous agricultural dissemination methods and approaches that have been tried to avail agricultural information from research institutions to farmers. The approaches include field days, mass media, information desks, farmer field schools, training and visit, demonstration, common interest groups, agricultural shows and exhibitions. However, limited success in terms of number of farmers reached and successful technology adoption has been realized (Dixon, 2010). This has been attributed to declining numbers of extension officers and increase in number of farmers coupled with inadequate infrastructural support. In many extension systems in developing countries just like Kenya, extension system is constrained by declining human and other supportive resources.

Kenya's experience of using unsuccessful approaches to deliver services to farmers has taught policy makers that in order to be effective; extension agents should avoid top-down planning and implementation of intervention to farmers' problems in favour of demand-driven and farmer led, participatory approaches. These include Farming Systems Approach, Rapid Rural Appraisal (RRA), Participatory Rural Approach (PRA), Focal Area Development Approach (FADA) and Farmers Field Schools (Kibbet, et al 2006).

The Training and visit (T & V) system of agricultural extension was introduced in Kenya in 1982. Its basic goal was to build professional extension service that was capable of assisting farmers in raising agricultural production and/or income and providing appropriate support to agricultural development. In 1984, the strategy shifted from a centralized focus, to a more decentralized system where most of the work was done at the district level (1987). This District Focus for Rural Development was based on a complimentary relationship between districts with the aim of encouraging local initiative in order to improve problem identification, resource mobilization and project implementation (Kibbet, et al 2006).

Since 2000, the Swedish International Development Agency (SIDA)- supported National Agricultural and Livestock Programme (NALEP) approach (Republic of Kenya, 2010a). The key pillars of the NALEP approach are i) participation extension; ii) demand-driven extension; iii) pluralism in provision of extension; and iv) transparency and accountability in the management of resources.

Farmer Field Schools (FFS) approach has also been used as a revitalization approach in enhancing productivity of crops. According to Hiller, et al.,(2009) FFS is described as a "school without walls" that is used for capacity building on farming communities to adopt innovations for sustainable agriculture. It is a group extension teaching method, which teaches basic farm management skills to make farmers experts in their own farms. The knowledge acquired during the learning process enables farmers to adapt their existing technologies to be more productive, profitable, and responsive to changing conditions, or to test and adopt new technologies (Mweri and Khisa, 2001).

2.2 Review of the National Agricultural Sector Extension Policy (NASEP).

The government is currently implementing the National Agricultural Sector Extension Policy (NASEP) that aims to guide and harmonize management and delivery of extension services in the country (Republic of Kenya, 2010a). The policy advocates demand-driven extension services and preparation of other players in the delivery of extension services. In fact it recognizes the need to diversify, decentralize and strengthen the provision of extra services with a view to increase sustainability and relevance to farms. Under National Agricultural Sector Extension Programme (NALEP), agricultural training in provided by the Ministry of Agriculture (MOA) and ministry of Livestock and Fisheries (MOLFD) though tertiary training colleges and farmers training centers. Training in agriculture and related fields is also provided at degree levels by public and private universities. Farmers are trained in farmers training centers. Agricultural knowledge, information and technology are provided at the Agricultural Information Center and through agricultural shows (Kibbet, et al 2006).

2.3 Global developments necessitating reforms in agricultural extension

Several developed countries have fully or partially privatized their agricultural extension services in a variety of ways. Terms like outsourcing, cost-recovery, and contracting out are related to the drive for privatization (Farrington, et al, 2002). These reforms resulted into enhanced food security. Costa Rica has a unique system under which the government provides farmers with extension vouchers which can be used for getting extension advice from private specialists. The trend has resulted into demand driven extension services.

In England, the public extension service has evolved over time into a private consulting practice. The positive result is enhancing deficiency of staff, and the negative effect is the deprivation of small farmers of extension services as the result of their inability or

unwillingness to pay. It is also said that the government has taken over some previously privatized advisory functions because of dissatisfaction with the private sector (Farrington, et al, 2002).

In Holland, about 60% of the extension budget comes from farmers, while the remaining 40% is provided by the government. The benefits include increased efficiency, improved quality, client-orientation, job satisfaction for staff, and expanded marketing opportunities for farmers. The problems faced include loss of government authority, the government's inability to keep financial promises, and weaker communication with the stakeholders because of creation of competition among them.

In Albania, the private sector entrepreneurial initiatives to create a long-term relationship with farmers have proved to be successful (World Bank/USAID. 2002). The extension services in Nicaragua are both decentralized and semi-private. Bulgaria privatized a number of state farms to be used as demonstration farms, with an objective of establishing private extension service. Since the experiment was not successful, the government decided to establish a National Agricultural Advisory Service (NAAS) with external financial assistance. The NAAS is now being reviewed, with FAO assistance, for possible reform in order to meet new learning needs of farmers, as the country is scheduled to join the European Union in 2007 or soon thereafter (FAO. 2013).

Estonia has both a public extension advisory service for poor farmers and a private service for better-off farmers. (FAO. 2003).Uganda is experimenting with the privatization of extension through the creation of a pool of private extension specialists out of its existing public extension service; registered farmers' associations could call upon this pool through bidding for providing services related to selected enterprises, and pay for the services from the funds given to them by the donors through decentralized government units. It is indeed a bold experiment, but the sustainability of this arrangement remains to be seen after the donors' funding runs out (Mubangizi, et al., 2014).

In Israel, the efforts to even semi-privatize national extension services have not met with success. The government is still responsible for providing extension advice, but encourages privatization through the standing practice of growers to contribute portion of their income to research and development including extension, public and private partnership in financing

and operating units within the extension service, payment for services by commodity production and marketing boards beyond a basic extension package, the provision of more intensive extension activities at the request of needy growers, special agreements with commodity farmers' organizations, extension staff working on their day off in exchange for direct payment from farmers, provision of equipment like mobile phones to extension advisers by growers associations, and direct payment by farmers for participation in training activities (Rivera, 2013).

2.5 Analysis of stakeholders provision of agricultural extension services

The report presents information on extension services provided by government extension officers, private companies, international firms, non Governmental and inputs companies. The firms include; Kenya Agricultural Research Institute (KARI)-headquarters-Kabete personnel, European Cooperative for Rural Development (EUCORD), Non governmental organisations (NGOs) such Farm concern, Nairobi offices, private and inputs companies such as Kenya Tea Development Agency (KTDA), Syngenta Kenya, international firms such International Livestock Research Institute (ILRI), International Centre for Insects Physiology and Ecology (ICIPE) and International Centre for Research and Agroforestry (ICRAF).

2.6 Stakeholders accessibility and utility various agricultural extension approaches

Table 1 reveals that Farmers field schools, demonstrations, contact farmers method and community leaders were most utilized methods to promote extension services by private firms such as European Cooperative for Rural Development (EUCORD) and Kenya Tea Development (KTDA) as illustrated by (Table 1) 20%, 22%, 21%, 17%,16% and13% respectively.

Computers, phones and integrated systems extension methods were favoured by research based organizations such as 27% ICIPE, 18% Farm concern and ICRAF 29%.

Mass methods of extension for example field days, agricultural shows, church based groups, and organised field visits and bench marking methods by expressing support through (Table 1) 47%, 21%, 18% and 17% were mostly utilized by government extension officers and inputs company such as Sygenta Kenya.

Table1: Stakeholders accessibility and utility various agricultural extension approaches

	EUCORD	Farm Concern	ICIPE	ICRAF	ILRI	KARI Kabete	KTDA	Ministry of Agriculture	Syngenta	Total
Existing Extension Approaches	%	%	%	%	%	%	%	%	%	%
Famer Field Schools	17	6	8	16	5	10	20	11	7	100
Demonstrations	10	9	12	8	8	11	21	8	13	100
Contact farmers	16	7	5	10	16	10	17	12	10	100
Community leaders	17	16	11	6	8	8	22	7	5	100
ASK show	8	17	5	12	8	15	9	14	12	100
Information via Radio	11	18	8	10	8	16	4	11	14	100
Government Agric. Extension agents	10	7	7	6	8	17	1	21	3	100
Pamphlets/brochures	3	17	16	18	15	8	7	12	15	100
Organised Field days	10	16	7	10	8	7	9	21	12	100
Private extension service providers	9	15	4	12	12	8	17	12	11	100
Information from cyber cafes/ computers	12	8	17	12	15	9	12	8	7	100
Via phones networks eg Msoko, mfarm etc	3	8	27	29	7	2	8	8	8	100
Church based groups	3	9	7	5	3	6	18	47	2	100

2.7 Stakeholders accessibility and utility of various integrated agricultural extension models

The current stakeholders report presented three alternative models in agricultural extension services provision in promoting and production of production, marketing and consumption value chains. The three alternative models were;

- ✓ Individual farmer extension model
- ✓ Group/mass extension model
- ✓ ICT and Print media model

Table 2, indicates that nine out of ten stakeholders assessed supported individual model of extension across value chains as a key method in extension. The model includes methods such as farm or home visit, office visit, telephone calls and demonstrations. Further, table 2 illustrates that majority of stakeholders 7/10 supported integrated communication technology ICT and print media for enhancing production, marketing and consumption value chains.

Contrary to Table 1, a few of stockholders 5/10 (Table 2) supported mass methods of extension services for example field days, agricultural shows, church based group, and organised field visits and bench marking methods by expressing support through (Table 2).

Table 2: Stakeholders accessibility and utility of various integrated agricultural extension models

	EUCORD	**Farm Concern**	**ICIPE**	**ICRAF**	**ILRI**	**KARI Kabete**	**KTDA**	**Ministry of Agric**	**Syngenta**	**Total**
Alternative extension models										
Individual farmer model	✓	✓	✓	✓	✓	✓	✓	✓	✓	9
Group or mass farmers model	✓	✓	✓					✓	✓	5
ICT and Print Model		✓	✓	✓	✓	✓	✓	✓		7

2.9 Opportunities and recommendations

There is need to embrace ICT models of extension followed by individual and mass models of service provision.

There is need for modernizing national agricultural extension systems by addressing above issues through assessing the existing extension organization against farmers' needs and determine whether to strengthen or restructure it.

Decentralization of extension should be done but not before capacity-building of the staff and orientation of relevant elected officials to broaden the technical mandate of extension with an aim of broader development of rural human resources.

There is need to improve on national policy on extension in order to ensure political and financial and private sector commitment. Further give extension profession a long overdue status similar to other agricultural disciplines by bringing pre-service education in agricultural extension in line with the modernizing of the national extension system.

There is need to promote pluralism in extension by involving public, private and civil society institutions. Privatize extension partially or fully where it is socially and economically feasible and develop and information technology tools to facilitate the work of extension workers.

There is need to encourage bottom-up, grassroots extension programme planning by farmers in order to make extension demand-driven, but also exercise supply-driven, top-down modality for promoting common public good practices such as conservation of natural resources and environment protection and ensure effective operational linkages between extension and research and other key relevant institutions.

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Appendix, 1

Agricultural extension approaches and alternative model

Questionnaire

Questionnaire Number…….....

Date …….....

Enumerator's name…….....

Time at start interview…….....

1.0 General Information

1.1 Name of the respondent (Optional)……

1.2 Phone number……..

1.3 County……..

1.4 Sub County……..

1.5 Position held in the organization ……

Existing extension approaches in promoting production of various value chains

Variable	**Questions on agricultural extension approaches**	**Tick appropriately**	**Levels of value chain** (Tick appropriately)
2.1.0	Are your farmers members of Famer Field Schools? At what stage is this method effective across various value chains? **(Tick appropriately on your right column)**	1=Yes 0=No	Production=1, Consumption=2, Marketing=3
2.1.1	Have they been involved in improved value chains farming demonstrations? When is this method appropriate across various value chains?	1=Yes 0=No	Production=1, Consumption=2, Marketing=3
2.1.2	Are farmers contacted by other farmers across various value chains? When is this method effective	1=Yes 0=No	Production=1, Consumption=2, Marketing=3

	across various value chains?		
2.1.3	Are community leaders involved in advocacy for various farming practices? If yes, At what level of value chain is the advocacy?	1=Yes 0=No	Production=1, Consumption=2, Marketing=3
2.1.4	Have you been involved in field visit or ASK show ? If yes, When is this method appropriate across various value chains?	1=Yes 0=No	Production=1, Consumption=2, Marketing=3
2.1.5	Do farmers receive farming information via Radio ? If yes, When is this method appropriate across various value chains?	1=Yes 0=No	Production=1, Consumption=2, Marketing=3
2.1.6	Do government Agric. Extension agents visit farmers regularly? If yes, When is this method effective across various value chains?	1=Yes 0=No	Production=1, Consumption=2, Marketing=3
2.1.7	Are farmers provided with pamphlets/brochures containing agricultural information? If yes, When is this method effective across various value chains?	1=Yes 0=No	Production=1, Consumption=2, Marketing=3
2.1.8	Do you organise Field days to convey new techniques in farming? If yes, When is this method needed across various value chains?	1=Yes 0=No	Production=1, Consumption=2, Marketing=3
2.1.9	Do you partner with private extension service providers? If yes,	1=Yes 0=No	Production=1, Consumption=2, Marketing=3

	At what level of various value chains?		
2.2.0	Do farmers source information from cyber cafes or personal computers? If yes, At what level of value chains?	1=Yes 0=No	Production=1, Consumption=2, Marketing=3
2.2.1	Do you source information from phones networks? Msoko, mfarm etc If yes, When is this method effective across various value chains?	1=Yes 0=No	Production=1, Consumption=2, Marketing=3
2.2.2	Do farmers source information from church based groups? If yes, When is this method effective across various value chains?	1=Yes 0=No	Production=1, Consumption=2, Marketing=3

There are three alternative models in agricultural extension services provision in promoting and production of various value chains. The three alternative models are;

1. Individual farmer extension model
2. Group/mass extension model
3. ICT and Print media model

Express your opinion by ticking on suitable model in enhancing production, consumption and marketing various value chains.

Integrated extension model	**Models methods/techniques**	✓ **Tick on suitable model for promoting adoption and promoting of various value chains.** ✓ **Rank across value chains**			
Individual farmer model	I. Farm or home visit II. Office visit III. Telephone calls IV. Demonstrations	1= Production	2= Consumption	3= Marketing	4= None

Group or mass farmers model	i. Meetings ii. Demonstrations iii. Leaders training iv. Tours and field day	1= Production	2= Consumption	3= Marketing	4= None
ICT and Print Model	i. Radio programmes ii. TV broadcast and shows iii. Internet iv. You tube and mobile phones	1= Production	2= Consumption	3= Marketing	4= None