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Research Article

FARMER'S PERCEPTION ON THE EFFECTIVENESS AND SUSTAINABILITY OF DISSEMINATED AGRICULTURAL TECHNOLOGIES THROUGH FARMER GROUPS APPROACH IN KISII COUNTY, KENYA

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ABSTRACT

Hunger and extreme poverty has been of great concern in both developed and developing countries in the world. This challenge has been aggravated by various factors including social-economic factor consisting of the networks by which the local people shares information amongst them and technical factors which are shaped by extension service providers to enhance modern agricultural technologies. Over the years various agricultural extension approaches have been employed to improve the dissemination of agricultural technologies these include Focal Area Shifting Approach, Farmer Field Schools, Farmers Participatory Research, Farmers Research Committees, Participatory Rapid Appraisal, Participatory Learning and Action, National Accelerated Agricultural Inputs Access Programme, and Njaa Marufuku Kenya. The purpose of this study was to determine farmer's perceptions on the effectiveness and sustainability of using supported farmer groups in disseminating agricultural technology. Multistage and purposive sampling techniques were used to obtain a sample of 351 respondents from a target population of 3,678 farmers from 47 identified farmer groups across the county. Structured questionnaires were used to collect data which was later coded and subjected to Statistical Package for Social Sciences software and Microsoft Excel for analysis. The findings revealed that majority of the respondents were female at 62.5% and majority of the respondents had primary level of education at 54.4%. The study established that farmer's perceptions on dissemination of agricultural technologies through supported farmers group approach was effectiveness and sustainable at 96.4% and 66.7% respectively. It is recommended that, there should be continuous vigorous capacity building to empower members in funded groups in the implementation of their respective projects; more enhanced community participation, financial support and full utilization of the purchased technologies and farm inputs. Also the components of supported farmer groups should be further strengthened and adopted so that their impact can be reflected more strongly in disseminating agricultural technology.

INTRODUCTION

Globally, hunger and extreme poverty has been of great concern in both developed and developing countries. According to Jelle (2003), the demand and consumption of food will increase in the near future globally. This challenge has been aggravated by social-economic factor which consist of the networks through which the local people shares information amongst them and technical factors which are shaped by extension officer to enhancing modern agricultural practices. Africa's population is projected to double to two billion people by 2050 and globally, food production will have to double to meet the needs of increasingly urban populations (Lamboll *et al.*, 2011).

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There is widespread perception that increased use of recommended agricultural technologies enhances rural food productivity growth and poverty reduction. However, technology utilization and new policy application has remained low in Sub-Saharan Africa though it has rapidly increased in other parts of the world (Stoorvogel & Smaling, 1990). This low adoption of technology by farmers partly explains lagging agricultural productivity growth in Sub-Saharan Africa (Morris *et al.*, 2007). Over the years the Kenyan government has employed various agricultural extension approaches to improve dissemination of agricultural technologies to enhance food production to reduce food insecurity. These supported farmer groups include but not limited to Focal Area Shifting Approach (FASP) by National Agriculture and Livestock Extension Programme, Farmer Field Schools (FFS), Farmers Participatory Research (FPR), Farmers Research Committees (FRC), Participatory Rapid Appraisal (PRA), Participatory Learning

And Action (PLA), National Accelerated Agricultural Inputs Access Programme (NAAIAP), Njaa Marufuku Kenya (NMK). Farmer groups have been used in extension to fast track dissemination of appropriate extension messages to farmers using seminars, trainings, field days, on-farm demonstrations, meetings, barazas and review workshops (Republic of Kenya, SRA, 2004). The effectiveness of these approaches will be assessed based on the theory of social protection as elaborated by Norton, Cornway & Foster (2001). This is based on the assumption that some actions are taken by the public to counter their levels of vulnerability, risk and deprivation which are deemed socially unacceptable within a given society. This approach is quite appropriate in light of dwindling extension staff numbers in Kenya. In Kisii County for instance, the extension staff-farmer ratio is 1:3000. Through farmer group approach and farmer to farmer extension, dissemination of technologies is fast tracked to improve farmers' socio-economic condition. However, despite this initiative which espouses bottom-up approach in demand driven dissemination of technologies, poverty and food security remains a major problem.

MATERIALS AND METHODS

The Study Area

The study was conducted in Kisii County. The county lies between latitude 0 30'and 1 0'South and longitude 34 38'and 35 0'East. It covers an area of 1,317.9 km^2 with a total population of 1,152,282 and 245,029 households and consists of nine sub-counties (Kisii County 2013).

Sampling procedure and sample size

The study used a sample size of 351 respondents out of target population of 3,678 as derived from the Morgan's table of sample size determination (Krejcie & Morgan, 1970).

The study applied Multistage and purposive sampling procedure to select respondent and extension staff to participate in the study. First stage was at the sub-counties level where supported farmer groups were undertaken, the second stage was at the ward and the third stage entailed selecting of participants randomly within the groups. Selection of extension staff was purposive by only targeting those officers with rich information pertaining supported farmer groups in the county.

RESULTS AND DISCUSSION

Analysis of Age, Level of Education by Gender of the respondents

The findings revealed that there were no male in the age bracket between 18-35 years and 70 years and above were illiterate. About 6.69% of the female interviewed were Illiterate while 1.22% of male were Illiterate.

Very few respondents attained post-secondary education, where female respondents were the least at 0.61% while the male counterparts were at 1.82%. Majority of the respondents across all the education system were between the ages of 36-55 years (Table 1). The number of years when a person spent in formal education is one of the most important determinants to increased farmers knowledge. Educated farmers usually have a better opportunity to access information on new agricultural technologies and are generally able to assimilate, to process and to use this information to improve productivity (Makon*e et al.,* 201*5).*

Education facilitates the process of information flow and leads persons to explore as wide as possible on the different pathways of acquiring information regarding agricultural technology (Ersado, 2001). The results further revealed that female engage more in community social groups as opposed to male counterpart at 62.6% and 37.4% respectively. This imply that, there is high social economic value attached to farmer's groups in the community, female have a higher tendency to join groups dealing with an enterprises that gives high and quick returns, that is why most of the social groups in Kisii county are comprised of women self help group.

Effectiveness of disseminated technologies through supported farmer groups (SFG) approach

About 96.4% of the respondents indicated that, the dissemination of agricultural technologies through supported farmer groups is effective and 2.7% showed that it is not effective (Table 2). The findings are in consistent with that of (String F, Coulter L, McKone & Hussain, 1997) who conducted a broad study on the effectiveness of groups in sub-Saharan Africa and found that effectiveness of the farmer's groups in terms of technology dissemination is mainly due to proper leadership and cooperation among farmers within the group.

Table 1. Analysis of age, level of education by gender

Age bracket	Illiterate		Primary		Secondary		Post-secondary		Total		
	Male	Female	Male	Female	Male	Female	Male	Female	M	F	%
18-35	0	1	15	22	13	16	2	2	30	41	21.58
36-55	2	12	27	78	29	35	2	0	60	125	56.23
56-69	2	8	14	19	9	11	1	0	26	38	19.45
>70	0	1	3	1	3	0	1	0	7	2	2.74
Total	4	22	59	120	54	62	6	2	123	206	
%	1.22	6.69	17.93	36.47	16.41	18.84	1.82	0.61	37.4	62.6	

Farmers' perceptions on effectiveness of disseminating technology through SFG approach.

Table 2. Effectiveness of disseminated technologies through SFG)

Response	Frequency	Percent (%)
Not effective	9	2.7
Effective	321	96.4
No response	3	0.9
Total	333	100.0

Extension officer's perceptions on effectiveness of disseminating technology through SFG approach.

The same questionnaires were also administered to 18 extension officer to serve as check list and the results revealed that, disseminating agricultural technologies through supported farmer groups is effective at 94.4% while 5.6% indicated that it's less effective (Table 3).

Table 3. Effectiveness of disseminated technologies through SFG

Response	Frequency	Percent (%)
Less effective	1	5.6
Effective	17	94.4
Total	18	100.0

Extension officer's perception on sustainability of SFG approach of technology dissemination

To establish the sustainability of disseminated technologies through supported farmer groups approach, 18 key informants (Extension service provider) who have served in the region for long period of time and had in-depth information concerning supported farmers groups. They were asked to indicate the option which best describes the situation whether supported farmer groups approach of technology transfer is sustainable. The responses were rated on a five point Likert scale where: 1= strongly agree; 2=Agree; 3=Neutral; 4=Disagree and 5=Strongly Disagree. The findings are summarized in Table 4. The findings indicated that, majority of the respondents (66.7%) indicated that dissemination of technology through supported farmers groups is sustainable where as 22.2% indicated that is not sustainable and 11.1% were neutral.

Table 4. Perception on sustainability of supported farmer groups

Response	Frequency	Percent (%)
Strongly Agree	5	27.8
Agree	7	38.9
Neutral	2	11.1
Disagree	4	22.2
Total	18	100.0

Improving effectiveness and sustainability of disseminating agricultural technologies

To improve the effectiveness and sustainability of disseminated technology, the following opinions were identified by the respondents. The findings revealed that, making appropriate follow ups was the most cited at 27.8% followed by capacity building of the farmers at 22.2% and to ensure there is adequate resource/finance to the extension service providers at 11.1% (Table 5)

Table 5. Improving effectiveness and sustainability of disseminating technologies

Opinions	Frequency	Percent (%)
Ensure there is adequate resource to extension officers	2	11.1
Make appropriate follow ups	5	27.8
Demand driven approaches	1	5.6
Motivation of Farmers and Extension officers	1	5.6
Ensure there is close monitoring of the ongoing projects	1	5.6
Individual farmers contact	1	5.6
Ensure capacity building of the farmers	4	22.2
Participatory approach	1	5.6
Strong Networking among the stakeholders	1	5.6
No response	1	5.6
Total	18	100.0

Influence of Supported Farmer Groups Approach on Technology Dissemination

The correlation between supported farmer groups approach and agricultural technology dissemination was significant with a positive but weak relationship of r= 0.478 at a p value of 0.000 (Table 6). The relationship between the two variables can be represented by the statement that there is a statistically significant in the relationship between supported farmer groups approach and the dissemination of agricultural technology. During group meeting discussions issues became clear to participants and farmers were able to implement as they were convinced of the benefits associated with various agricultural technologies. In group discussions the farmer share their experiences and this helps farmer to learn from each other hence enhancing outreach and quick dissemination of technologies (Mochama, 2015). According to AGRA, (2012), by exchanging ideas, sharing experiences and discussing best practices, success stories and challenges, individuals and organizations from across the agricultural landscape gain important knowledge on issues that impact their lives and livelihoods.

Table 6. Correlation Coefficient between SFG and Technology dissemination

Correlations coefficient		Technology dissemination
Supported farmer groups approach	Pearson Correlation	0.478
	Sig. (2-tailed)	0.000
	N	326

Conclusion and Recommendations

From the above analysis it is clear enough that it is more effective and sustainable to disseminate agricultural technology through supported farmer groups approach. It's therefore recommended that, there should be continuous vigorous capacity building to empower members in funded groups in the implementation of their respective projects; more enhanced community participation, financial support and full utilization of the purchased technologies and farm inputs. Also the components of supported farmer groups should be strengthened so that their impact can be felt more strongly in terms of increasing food security and income generation among the people of Kisii County.

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