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Comparative Study on Adoption of High Value Traditional Crops among Common Interest Group and Non-Common Interest Group Smallholder Farmers in Miwani Division, Muhoroni Sub County, Kenya

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Abstract:

Common Interest Groups (CIGs) is an extension approach that brings farmers together, to acquire information on agricultural production. In Kenya CIGs are used by extension agents in the ministry of Agriculture. In Miwani division, CIGs were used to promote high value traditional crops (HVTCS) such as sweet potatoes, cassava and indigenous vegetables. The purpose of the study was to determine whether there is a difference in adoption of HVTCS among smallholder farmers in CIGs and those who farm independently. The results indicated that farmers in CIGs planted a higher acreage of HVTCS and more varieties compared to non-CIG members.

Keywords: *Common interest groups, high value traditional crops, adoption, extension approach, smallholder farmers*

1. Introduction

Extension is an ongoing process of learning through which people get information and acquire knowledge and skills to improve their standards of living. Extension services are an integral part of the ministry of Agriculture in Kenya. Several extension approaches have been used by the Ministry of Agriculture in Kenya to educate farmers and include: individual farm visit, Training and Visit (T&V), Catchment Area and Farmer Field Schools (FFS) among others. The chronology of extension service in Kenya began with the large scale group approach common among large scale farmers with common interests in commercial farming such as dairy, tea and coffee. The focus was to form cooperatives through which the farmers could sell their products. The individual approach followed, but faced constraints because extension agents were only able to cover small areas at any given time and therefore not many farmers could take advantage of innovations. Training and Visit (T&V) approach implemented in the 1980s involved regular contact between the farmers and the frontline extension agents. The farmers benefited from new technologies and success was observed in terms of increase in agricultural production. T & V approach, however, despite the successes still proved ineffective because of lack of accountability and marginalization of farmers who were not within easy access to demonstration farms (World Bank, 1999).

The catchment area approach focused on a single locality with coverage of about 200 farmers who trained on soil conservation and cultivated other crops alongside the conservation measures. Success of the catchment group approach was in the extensive adoption of soil conservation interventions by farmers (Bindlise and Evenson, 1993). Shortcomings in catchment approach that only a few individual farmers were covered in a wide area and the approach only focused on soil conservation measures with little emphasis on food crop production. The Farmer Field Schools (FFS) approach has also been applied in extension approach that involved demonstrations carried out in small plots. According to a study done by Mogeni (2005), FFS only benefited those whose farms were used as demonstration plots. Although FFS used group approach, there were more failures as demonstration plots were situated at sites which could not be reached by many farmers easily and most of the group members would give up before the results were realized. The demonstration plots were small and could not be used to measure productivity of any crop grown. Further, the farmer groups were not formed according to interests of farmers in an area and so there were a lot of assumptions which led to low adoption.

The National Agriculture and Livestock Extension Programme (NALEP) Phase I and II were introduced in the year 2001 and 2006 respectively. The implementation was done through Common Interest Groups made up of people with similar interests who come together to pursue a common goal. Common interest group approach among smallholder farmers was introduced to in particular address economic and social processes (Millie, Antony & Gedeon, 2006). In this approach, the key role of extension services is to provide information that would trigger demand for technological opinions. Extension agents recognize and encourage farmers in a local area through CIG approach to improve agricultural productivity of crops such as high value traditional crops (HVTCS). High Value Traditional Crops include cassava, sweet potatoes, arrow roots and sorghum. The crops are easy to grow and of high nutritional

value and are critical for feeding the world most disadvantaged regions (INTERPAKS (1996). High value traditional crops are important and can be adopted as food security crops because they are drought, disease and pest resistant and can grow in a wide range of climatic conditions (KARI, 2006). HVTCs are promoted through CIGs because they can easily be grown by farmers and planting materials can be found locally and sharing of materials enhanced among farmers resulting into social facilitation (Stubbs, Mwangangi, Muiruri & Mwangangi, 2012).

Despite a lot of efforts put in promoting production of HVTCs through CIGs, there was no evidence of documentation on the effect of CIG approach on adoption of HVTCs. The study sought to find out if membership in CIGs had an influence on high value traditional crops productivity by making comparison with non-members growing same crops.

2. Purpose of the Study

The purpose of the study was to investigate any variations in adoption of high value traditional crops among smallholder farmers trained and working through CIGs and farmers who source for information on production independently. The main objective of the study was to compare the adoption of high value traditional crops among CIG and non-CIG members in Miwani division, Kenya.

3. Methodology

The study utilized a comparative cross sectional survey research design. Cross-sectional studies are perfect for describing current situations making it possible to study self-reported facts about respondent's feelings, attitudes and opinions and habits. Data was collected at a single point in time and each person had a chance of being selected and interviewed independent of another person in the study population (Mugenda & Mugenda, 2003). The other reason for choosing survey is because it allows for use of interviews of the sampled population and it is relatively faster and less expensive.

The target population was smallholder farmers who were growing high value traditional crops in Miwani division. The accessible population was farmers who are members of Common Interest Groups (CIGs) growing high value traditional crops. The unit for study was CIGs which had been in existence and grown HVTCs for one or more years. Sampling frame composed of members of CIGs was obtained from a list of High Value Traditional crops CIGs in Miwani division. The sample size was made up of 120 CIG members proportionately selected while 120 of non-CIG members were selected by simple random sampling in Nyando division to serve as the comparison group.

A questionnaire with both open and closed ended questions was used to ensure systematic, consistent and objective interviewing. Questionnaire was used because of its practicability and applicability to research problem and size of the population and it is also cost effective (Densembe, 2008). The validity of the questionnaire was determined by research supervisors from the department of Applied Community Development Studies, Egerton University. Pilot-testing was conducted using random samples of 10 non-CIG members and 10 CIG members growing high value traditional crops in Nyakach division. The total sample size of 120 CIG members was proportionately selected for the study while 120 of non-CIG members were selected by simple random sampling in Nyando division to represent the HVTCs farmer population. Data collected was tested for reliability using Kuder-Richardson 21 (K-R-21) coefficient. Results gave a reliability coefficient of 0.71 for non-CIGs and 0.73 for CIGs which were above the recommended value of 0.07 (Kathuri and Pals, 1993).

A research permit for the study was obtained from the then National Council of Science and Technology before commencement of the research study. Data from the smallholder farmers were collected through face-to-face interviews guided by the questionnaires. Responses from the farmers were documented by the researcher. There was 100% response during data collection enhanced by appointments and visits where respondents were not available. The collected data was analyzed using descriptive statistics to compare adoption of high value traditional crops between CIG and non-CIG members.

4. Findings and Discussion

4.1. Demographic and Socio-Economic Characteristic of the Study Respondents

Table 1 depicts the demographic profile of respondents. A total of 240 farmers participated in the study, that is, 120 CIG members and 120 non-CIG members. CIG members were composed of 62(52%) males and 58(48%) females. On the other hand non-CIG members were composed of 83(69%) males and 37(31%) females. The composition of males and females in CIGs were more or less the same while for the non-CIGs members there were more males than females. These findings demonstrate that the common interest group approach gave equal chances to both males and females to join high value traditional crop CIGs of choice as stipulated by Ministry of Agriculture (MOA, 2001). The results agree with a study done in Naivasha by Macharia (2013) who noted that 52% common interest group members were men while 48% were females. The findings show that about half of both CIG 53(44%) and non-CIG 49(41%) members were aged between 36 years and 55 years. The results also indicated that two thirds 94(78%) of CIGs members and 90(75%) of non-CIG members were married. More than half (58%) of CIG households were made up of between 1 and 3 members, whereas 65(55%) of non-CIG households had 4-6 members. Two thirds (68%) of CIG members and (61%) of non-CIG members had farm size of more than 2 acres. These results show that (31%) of CIG members and (38%) of non-CIG members had almost same farm size of 3 acres and above.

Description	CIG members Frequency (%)	Non-CIG members Frequency (%)
<u>Gender</u>		
Males	62(52)	83(69)
Females	58(48)	37(31)
<u>Age</u>		
Below 18 years	1(0.8)	0(0)
18 – 35 years	32(26)	41(34)
36 – 55 years	53(44)	49(40)
56 years and above	34(28)	30(25)
<u>Marital Status</u>		
Single	26(21)	30(25)
Married	94(78)	90(75)
<u>Household size</u>		
1 – 3	68(58)	44(37)
4 – 6	43(36)	65(54)
7 and more	6(5.1)	10(8)
<u>Farm size</u>		
1 acre and below	6 (5)	8 (6)
2-3 acres	81 (68)	73(61)
3.1 acres and above	31 (26)	38 (31)

Table 1: Demographic characteristics of study participants

4.2. Socioeconomic Characteristics of the Study Participants

The study also revealed as shown in Table 2 that more than half 61(51%) of CIG members had a primary level of education while 18(15%) did not have any formal education. On the other hand half 61(51%) and 53(44%) of non-CIG members had secondary and primary levels of education respectively. From the results both CIG and non-CIG members had relatively the same characteristics in education. Occupation was not different between CIG and non-CIG members while monthly incomes were higher among CIG members than among non-CIG members.

Description	CIG Members Frequency (%)	Non-CIG Members Frequency (%)	P Values
<u>Level of Education</u>			
None	18(15)	0(0)	0.0001
Primary	61(51%)	53(44)	
Secondary	40(33%)	63(52)	
University	1(0.8)	4(3)	
<u>Occupation</u>			
Farmer	68(56)	59(49)	0.0452
Farmer and public worker	17(14)	19(16)	
Farmer and business	34(28)	42(35)	
<u>Monthly income (Ksh)</u>			
Below 1,000	44(36)	56(47)	0.0103
1,001 and above	76(58)	63(50)	

Table 2: Socio economic characteristics of the study participants

4.3. Adoption of High Value Traditional Crops between CIG and non-CIG Members

The objective of the study was to assess the rate of adoption of high value traditional crop (HVTCs) enterprises among CIG and non-CIG members. The study sought to establish acreage under of HVTCs, the type of crops and number of years grown by both CIG and non-CIG members. The findings are presented in the following sections:

4.4. Acreage for High Value Traditional Crop by CIG and non-CIG Members

The study revealed that half 61(51%) of CIG members had less than half an acre, 52(46%) had between 0.6-1 acre and 4(3%) had more than 1 acre under high value traditional crops before they joined the CIGs. The situation changed after seven years of implementation of high value traditional crop production related activities. For instance, after joining and involvement in orphan crop production activities, 74(62%) of CIG members had committed more than 1 acre of land for high value traditional crops as shown in Table 3. The study results show that 38% of CIG members had 0.6 to one acre compared to the initial stages of CIG formation, when the acreage for high value traditional crops production was low among CIG members. Seven years later, two and more acres were common among CIG members. This may be attributed to enhanced knowledge prompting increase in acreage for high value traditional crops among CIG members. From these results, it may be imperative to deduce that the greater knowledge acquired by CIG

members increased their desire to produce more high value traditional crops hence increased acreage. The results may also be attributed to participation in CIG activities, sharing of ideas among CIG members, positive competition among CIG members and group identification resulting into higher proportion of CIG members having more than one acre under high value traditional crops. During the study period, more than half of non-CIG members 82(68%) had committed 0.5 acre and below while the one third had committed up to 1 acre to high value traditional crop production and none of them committed more than one acre. In regard to current cultivated acreage for high value traditional crops, more acreage for high value traditional crops production was common among CIGs than among non-CIG members. The reason for the difference is likely that common interest group members participated in group activities, were trained in groups and had chance to practice what they were trained on and realized positive results which prompted them to increase acreage for high value traditional crops production. As for non-CIG members, there may have been no extra motivation because they practice on individual basis hence limited knowledge on high value traditional crops production.

Acreage	Previous Acreage		Current Acreage	
	CIG members Frequency (%)	Non-IG Members (not applicab-le)	CIG Members Frequency (%)	Non-CIG Members Frequency (%)
Less than 0.5	61(51)	-	1(1)	82(68)
0.6-1 acre	52(46)	-	61(51)	38(32)
More than 1 acre	4(3)	-	74(62)	0(0)
Remained same	3(2)	-	3(2)	-

Table 3: Previous and current acreage for High Value traditional crops grown by CIGs and non CIGs

4.5. Membership and Adoption of High Value Traditional Crops by CIG and non-CIG Members

The study sought to establish the type of HVTCs adopted by CIG and non-CIG members. On the type of high value traditional crops, this study established that non-CIG members, growing the various HVTCs were smaller compared to that of CIG members as shown in Table 4. From the study results, it is evident that more CIG members than non-CIG members were growing. This may be because CIG members were sensitized and trained on HVTCs production and since then have developed positive attitude which has resulted in adoption of more than one type of HVTCs after 7 years of practice. This could also be because CIG members had chance to pick flagged opportunities of interest for a longer period and had put in practice the production aspects which made them to grow and adopt more HVTCs as motivated by the results achieved by being in CIGs.

Crop	CIG members Frequency (%)	Non- CIG members Frequency (%)
Cassava	48(26)	25(19)
Sweet potatoes	36(18)	26(20)
Arrowroots	34(15)	20(14)
Local vegetables	43(23)	35(29)
Sorghum	36(18)	26(18)
Total	100%	100%

Table 4: Membership and adoption of high value traditional crops by CIG and Non-CIG members

The number of CIG members growing various high value traditional crops increased significantly than among non-CIGs members. This was realized in sorghum, local vegetables and cassava respectively where there were more CIG members than non-CIG members. These findings compares with a study by Henry (2005) which observed that there are opportunities for more farmers to grow more suitable HVTCs. The findings, therefore confirms the importance of CIGs approach in extension system in a more systematic manner by identifying and involving more actors in the value chains through CIGs. The approach should not be used in isolation of the other extension approaches. Despite the improved knowledge and adoption of HVTCs among CIG members, increase in number of CIGs, and in the acreage, the number of crops grown by CIGs was still low. Gaps for interventions should be identified by extension agents in order to capacity build farmers on the importance of diversity and improved acreage under HVTCs for increased output.

4.6. Conclusions and Recommendations

The conclusion drawn on the influence of CIG approach on high value traditional crops adoption is that there was considerable difference in terms of membership between CIG and non-CIG. There were more CIG members than non-CIG member growing high value traditional crops and hence adoption. From the results, it can be concluded that CIGs are important in keeping farmers in the

forefront to learn new ideas and technologies through agriculture extension service and in increasing influence of community, hence fast multiple effect.

The common interest group extension approach was designed to focus and particularly emphasize on group formation to build capacity of members of groups and to cater for a variety of farmers who adopt technologies to improve productivity in their farms (MOA, 2001). In the previous extension approaches, smallholder farmers were not involved in group activities and remained isolated from the rest of the farmers. This resulted into inadequate knowledge, low adoption rate and low productivity of crops, especially high value traditional crops (HVTCs). High value traditional crops were neglected by most of the farmers in Miwani but the idea of promoting the min CIG approach helped in creating awareness on the importance of HVTCs and this resulted into increased adoption of more HVTCs.

The researcher therefore recommends use of CIGs with other extension methods to promote HVTCs and any other technology for improving food security and livelihoods of farmers

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