Influence of Common Interest Group Approach on Orphan Crops Productivity among Farmers, Kenya

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Abstract

This Study was carried out in Miwani, Kenya to determine the influence of Common interest group approach on orphan crops productivity among smallholder farmers. Common Interest Groups are congregations of farmers brought together for the purpose of imparting technologies in order to increase farm productivity. The study was conducted through cross-sectional survey research design on 120 respondents from orphan crop group members in Miwani division and 120 from non-members in Nyando division selected through simple random sampling technique. Data was collected by use of interview schedules and treated with use of descriptive statistics and subjected to t-test analysis to determine whether there was significant difference of orphan crops productivity among members and non-members of common interest groups. The study findings indicated positive influence of common interest group approach on orphan crops productivity among members as characterized by increase in yields of the orphan crops. In conclusion, members of common interest groups benefited more than non-members by the virtue of their membership and participating in group activities. It is recommended that the approach be part of the extension system but with some modifications in its implementation to enhance knowledge geared towards commercialization of value chains.

Keywords: Common interest groups, Orphan crops, Productivity, Influence

Introduction

1.1 Background Information

The main objective of the study was to determine the influence of common interest group approach on orphan crop production among smallholder farmers. The orphan crops promoted in the study through common interest group approach were Cassava, sweet potatoes, local vegetables, arrowroots and sorghum. Orphan crops are valued culturally, and are often adapted to harsh environments and are targets for food security in Kenya (KARI, 2006). In Kenya, half of the hungry are smallholder farmers many of who depend on orphan crops but are not provided with means to increase their productivity. The orphan crops are vital for the livelihoods of millions of resource poor persons and farmers expected to tap and acquire knowledge, technologies and skills delivered through the common interest group approach to directly influence orphan crops productivity. These could be achieved through more effective education and trainings, ecologically suitable farming practices and appropriate choice of crops grown in groups for a fast spread effect.

A study report by Manrid et al (2012) showed that those who joined common interest groups achieved higher production levels and that the groups had increased chances to accessing new technologies. Research findings by Joash (2010), on common interest groups influence on implementation of crop production technologies; showed that the approach had a significant and positive influence on crop production. A study by Richard (2007) on the social and economic impacts of common interest group approach to extension service in Kenya showed that members of common interest groups had significantly increased access to extension services in general.

The findings of the study may assist policy makers, development planners, add new knowledge to the existing literature and assist donors in formulating proper and sound strategies to improve the common interest group approach with the aim of increasing orphan crops production efficiency and effectiveness. The findings of this study showed that those in common interest groups obtained high yields in orphan crops than non- members. This was because of sharing of ideas and competition among themselves.

1.1.1 Statement of the Problem

Since the initiation of the Common Interest Group approach in the year 2002, the Ministry of Agriculture's focus in Miwani division has been on promotion of orphan crops and numbers of interested farmers in orphan crops production have been consistently registered over the years (MOA, 2007). The study investigated the influence of common interest group approach on orphan crops productivity among smallholder farmers. When farmers come together through orphan crop common interest groups, there can be some influence on productivity of orphan crops through education and trainings and choice of crops grown. However influence of common interest group approach on orphan crops productivity among smallholder farmers remained unclear because no official study had been done despite a lot of efforts put in promoting the crops since the year 2002, hence the reason the study was undertaken.

1.1.2 Purpose of the Study

The purpose of the study was to determine the influence of common interest group approach on orphan crops productivity among smallholder farmers in Miwani Division, Muhoroni Sub-County, Kenya.

1.1.3 Objectives of the Study

The main objective of the study was to: Determine the yields of orphan crops among CIG and non-CIG members in Miwani division.

1.1.4 Hypotheses

The main null hypothesis of the study was that: There is no statistically significant difference in yields of orphan crops between CIG and non-CIG members in Miwani division.

Research Methodology

2.1 Introduction

This section consists of the procedures that were followed in conducting the study and they include; research design, the study area, study population, sampling procedures and sample size, instrumentation, data collection and data analysis.

2.1.1 Research Design

The study utilized a comparative cross sectional survey research design whereby data was collected from CIG members in Miwani division and compared with data collected from non CIG members in Nyando division. This was to allow use of interviews and data be 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 representative of the larger population in Miwani and Nyando divisions.

2.1.2 Location/Area of the study

The study was conducted in Miwani and Nyando divisions in Kenya. Miwani division is 72.2 square kilometres while Nyando division is 84,849 square kilometres.

2.1.3 Sampling Procedures and Sample Size

The unit of the study was groups which had been in existence for one or more years and growing orphan crops. The sampling frame constituted a list of orphan crop common interest group and non-common interest group members obtained from Agriculture offices in Miwani and Nyando divisions respectively. The reason for selecting a sample of non-common interest group members from a different division was to allow comparison of orphan crops productivity and to avoid biased results which may have been as a result of interaction between members and non-members of common interest groups. According to records, 57 common interest groups were formed between the year 2002 and 2009 out of which 15 groups with membership of 170 were selected by simple random sampling method. A cross sectional survey research for a population of 170 is 118 and the study utilized a sample of 120 common interest group members in Miwani and 120 non-common interest group members in Nyando.

To achieve the desired sample size, 8 respondents were selected from each of the 15 common interest groups sampled to give 120 respondents from each division as shown Table 1.

2.1.4 Instrumentation

An interview schedule with both open and closed ended questions was used in data collection to ensure systematic, consistent and objective interviewing. The respondents were interviewed in two sections which were the demographic and socio- economic characteristics and information on yields of orphan crops by members and non-members of common interest groups in Miwani and Nyando divisions.

2.1. 4.1Validity

The tools developed by the researcher were validated before actual data collection through discussions by a team of experts in the field of study from the department of Applied Community Development Studies in Egerton University to improve on the usefulness, meaningfulness and appropriateness of the findings of the study.

2.1.4.2 Reliability

To assess reliability and ensure consistency of the developed instruments, pretesting was carried out using simple random sample of 20 farmers growing orphan crops in Nyando division which has similar characteristics as those found in study area. The pretest data was later subjected to a reliability test using Kuder-Richardson 21 (K-R-21) method to measure internal consistency of data since the study was descriptive. For the study, a reliability coefficient of 0.7 was used and after pretest, coefficient values were 0.7057904 for non-common interest group and 0.733910665 for common interest group members and were adopted for the research.

2.1.5 Data Collection

The study permit was obtained from the National Council of Science and Technology through Graduate School of Egerton University before commencement of the research study. Data was collected by use of interview schedules in all the locations across the two divisions where common interest group and non-common interest group members were interviewed.

2.1.6 Data Analysis

The collected data was analyzed using both descriptive and inferential statistics. For this study, descriptive statistics was used to describe demographic characteristics of respondents. A t- test was used to assess and compare differences in yields of orphan crops between common interest group and non-common interest group members at confidence level of 95% (p≤0.05).

Results and Discussions

3.1 Demographic and Socio-economic characteristic of the study Respondents

According to the findings, more than half common interest group (78%) and non-common interest group (75%) members were between the age of 36 and 55 years and were married. The results are comparable with those of Hosea (2013) where 52% common interest group members were men while 48% were females while 69% of non-common interest groups members were males and 31% respectively females. These findings demonstrate that the common interest group approach gave equal chances to both males and females to join orphan crop common interest groups of choice as stipulated by Ministry of Agriculture (2001). Common interest group members had an average of 1.5 acres under orphan crops while non-common interest group members had an average of 1 acre for orphan crops production as shown in Table 2.

Majority of common interest group members had primary levels of education while most non-common interest group members had reached secondary levels. Majority of both common interest group (56%) and non-common interest group (49%) members practiced farming as the only major occupation as shown in Table 3.

3.1.1 Productivity of Orphan Crops in Terms Of Yields among Common Interest Group and Non-Common Interest Group Members

The study sought to establish previous and current orphan crop acreage under orphan crops by common interest group members and yield of each orphan crop produced. To compare the common interest group and non-common interest group members, the current yields and acreage for non-common interest group was established.
The null hypothesis which relates to the objective of the study stated that there is no statistically significant difference in yields of orphan crops among common and non-common interest group members

3.1.2 Acreage under Orphan Crops Production by Common Interest Group and Non-Common Interest Group Members

The study revealed that half 61(51%) of common interest group members had less than half an acre, 52(46%) had between 0.6-1 acre and 4(3%) had more than 1 acre under orphan crops before they joined the common interest groups. The study results show that 38% of common interest group members had 0.6-1 to acre compared to the initial stages of group formation, when 51% of them had less than 0.5 acres for orphan crops production. Seven years later, more than one acre under orphan crops was common among common interest group members 74(62%) while 0.5 acre and below under orphan crops was common among non- members 82(68%) as shown in Table 4. This may be attributed to enhanced knowledge prompting increase in acreage for orphan crops. The results may be attributed to participation in group activities, sharing of ideas among members, positive competition among common interest group members enhanced their desire to increase acreage under orphan crops. A significantly higher (p=0.0001) proportion of common interest group members increased acreage under orphan crops to more than one acre compared to non-common interest group members most of who had less than one acre under orphan crops after many years of practice.

3.1.3 Yields of Orphan Crops Grown by Common Interest Group and Non Common Interest Members

The study sought to establish the current and previous yields per acre of each orphan crop produced by common interest group members. The findings are shown in Table 5**,** revealed that the yields of orphan crop among common interest group members were higher as compared to those of non-common interest members. For instance, the yields per acre of sweet potatoes at the time of the study was 13.1 bags for common interest group members and 7.7 bags for non-common interest group members, cassava was 10.1 bags for common interest group members and 6.3 bags for non-common interest group members, local vegetables 7.2 bags, and sorghum 7.2 bags for common interest group members while for non-common interest group members, the yields for vegetables and sorghum were 6.5 bags and 5.5 bags respectively. Yields of arrowroots among common interest members were 6.4 bags and 2.2 bags for non-common interest members. The study results showed increased productivity of orphan crops as a result of increase in acreage for orphan crops production and adoption of more orphan crop enterprises by common interest group members.

There was remarkable increase in yields for sweet potatoes, cassava, local vegetables and sorghum among members of common interest groups. A t-test was conducted to determine whether there was statistically significant difference in the means of two groups of common interest group and non-common interest group members. A t-test was conducted for common interest group members to compare previous and current acreage. A t- test was also done to compare the current yields of orphan crops among common interest group and non-common interest group members and after computation, a p value of 0.0001 (p=0.0001) was obtained. Since the p value is less than the level of significance $\propto= 0.05$, we reject the null hypothesis because the difference in yields and acreage of the orphan crops among common interest group and non-common interest group members was statistically significant using a t-test (p<0.05). The study revealed that yields of orphan crops among common interest group members were higher as compared to those among non-common members. The results of the study was in agreement with the main aim of initiating common interest group approach by Ministry of Agriculture (2001) which stated that the approach will help enhance farmer's collective capacities to improve their economic and social status by increased productivity. These results also agree with Manrid, et al (2012) that farmers who are in groups benefit more than those who are not in groups. The increase in yields by common interest group members could have been influenced by access to extension services and sharing of production ideas among common interest group members. These findings show that being in common interest groups can contribute more than 100% increase in productivity and that working with groups other than individual farmers is considered more conducive and effective in extension service as recorded by Joash (2010).

4. Conclusions

Common interest group had much higher productivity than non-common interest group members of orphan crops with respect to, increased acreage and yields. From the results of the study, it is imperative to conclude that common interest group approach has influence on orphan crop productivity and is effective because of its multiplier effect and therefore plays a vital role in production of orphan crops and may lead to more pronounced impacts through enhanced productivity hence food security status.

4.1. Recommendations

The study recommends the following possibilities of improving influence of common interest group approach on orphan crops productivity as listed below:

1. The use of common interest group should be should be part of extension system and should be used alongside other extension approaches in a more systematic manner. This can be done by identifying and involving more actors in the value chains through common interest groups.

2. Promotions of orphan crop production should be geared towards commercialization and competitiveness in order to generate more income hence food security

4.1.1 Areas Suggested for Further Research

According to results from the study on influence of CIG approach on Orphan crops productivity among smallholder farmers, there is need to carry out further research study on certain areas as listed below:

1. Factors affecting productivity of orphan crops among farmers beyond membership in CIGs.
2. Influence of orphan crop production on gender for food security.
3. Factors influencing sustainability of CIGs in Agriculture Sector.

List of Tables

Table 1: Sampling Procedures and Sample Size for Orphan Crops Common Interest Groups inMiwani Division

Location	No. CIGs	Proportion	No. CIGs Selected	No. of Members Selected per CIG	Total sampled
Ombeyi	12	0.2	3	8	24
North East Kano	18	0.3	5	8	40
Nyangoma	27	0.5	7	8	56
	57	**1.0**	**15**		**120**

Table 2: Demographic Characteristics of Study Participants

Description	CIG members Frequency (%)	Non-CIG members Frequency (%)
Gender		
Males	62(52)	83(69)
Females	58(48)	37(31)
Age		
Below 18 years	1(0.8)	0(0)
18 – 35 years	32(26.2)	41(34)
36 – 55 years	53(45)	49(41)
56 years and above	34(28)	30(25)
Marital Status		
Single	26(21)	30(25)
Married	94(78)	90(75)
Farm size		
1 acre and below	6 (5)	8 (6)
2-3 acres	81 (69)	73(62)
3.1 acres and above	31 (26)	38(32)

Table 3: Socio Economic Characteristics of the Study Participants

Description	CIG members Frequency (%)	Non-CIG members Frequency (%)	P values
Level of Education			
None	18(15)	0(0)	0.0001
Primary	61(51.2)	53(44)	
Secondary	40(33)	63(52)	
University	1(0.8)	4(3)	
Occupation			
Farmer	68(56)	59(49)	0.0452
Farmer and public worker	17(14)	19(16)	
Farmer and business	34(28)	42(35)	

Table 4: Previous and Current Acreage for Orphan Crops Grown by Cigs and Non Cigs

Acreage	Previous acreage		Current acreage		p-value(t-test)
	CIG members Frequency (%)	Non-IG Members	CIG Members Frequency (%)	Non-CIG Members Frequency (%)	
Less than 0.5	61(51)	N/A	1(1)	82(68)	0.0001
0.6-1 acre	52(46)	N/A	61(51)	38(32)	0.0001
More than 1 acre	4(3)	N/A	74(62)	0(0)	0.0001
Remained same	3(2)	N/A	3(2)	N/A	0.0006

N/A= Not Applicable

Table 5: Recorded Yields of Orphan Crops Produced by CIG and Non CIG Members

Description	Previous yields in 90kg bags/acre		Current Yields in 90 kg bags/acre		P value (t test)
	CIG members	Non-CIG Members	CIG members	Non-CIG members	
Cassava	4.1	N/A	10.3	6.3	0.0001
Arrowroots	2.6	N/A	6.4	2.2	0.0001
Local vegetables	3.1	N/A	7.2	6.5	0.0001
Sweet potatoes					
Sorghum	2.7	N/A	13.1	7.7	0.0001
	3.2	N/A	7.2	5.5	0.0001

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