

Effect Of Gender, Age, Education And Marital Status Of Rice Farmers At Ahero Irrigation Scheme, Kenya On Rice Yield

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Abstract: Rice (*Oryza sativa*) is the third most important staple food crop in Kenya after maize and wheat. It is cash crop amongst the rural producers in the country. The production of rice in Kenya is done under Irrigation by the National Irrigation Board (NIB), The role of National irrigation board is to facilitate rice production through provision of Irrigation Water. Non-NIB irrigation is also done by outgrowers and Rain fed production (Nerrica rice). As Kenya aspires to produce enough rice to supply its over 40 million people over the next years, the Government reverted to policies that would increase rice productivity especially in the NIB schemes. Improving productivity would ensure increase in food security and increased income among smallholder farmers.

The national production of rice in Kenya is estimated to fluctuate between 48,000 and 80000 tonnes annually. The demand on the other hand stood at about 300,000 per annum in 2011 and a 12 per cent consumption annually.

Despite the fact that rice is produced under irrigation In Kenya, at Ahero Bunyala aand Mwea there is still deficit for rice production to meet the local demand. This study is aimed at determining the factors affecting Rice productivity at Ahero Irrigation Scheme Kenya.

Using the national irrigation board list of farmers as sample frame, farmers were randomly selected from the irrigated area and interviewed using a questionnaire. The outcome were analysed using SPSS version 20 from 285 farmers selected randomly from the irrigated area of the rice scheme. The results indicated that the socio-economic factors that influenced productivity were the gender, age, marital status, education. The study recommended that farmer education/ training in order to reduce inefficiencies on production.

Keywords .food security, rice demand, production, deficit in rice

I. INTRODUCTION

Rice is a cereal plant which resembles the other cereals in growth. The plant is an annual grass with exact culms(stem), 0.6-1.8 m in height .Most East African varieties grow to a height of 1.2 m. Under favorable conditions the plant tillers abundantly. Unlike other cereals, rice is able to germinate and thrive under water. Rice crop is able to transport oxygen to the submerged roots from the leaves where oxygen is released during photosynthesis. Thus it can live in an aquatic environment (Martin and Leonard, 1949)

Rice is a water and heat loving plant, requiring high temperature and adequate moisture .It grows below 1200m above sea level, however up to 1500m is tolerated .According

to Rathore (2011), a minimum temperature of 10°C is required for germination and 20-25°C for ripening.

In Kenya rice is mainly produced by small scale farmers distributed in central (Mwea), western (Bunyala) Coast(Tana Delta, Msambweni) and Nyanza (Ahero, Western Kano, Migori and Kuria) provinces. About 30000 rice farmers provide Labour and also raise their livelihood out of the crops production (KNRDS, 2007). Major traders in rice include the government owned, National Cereal and Produce Board (NCPB) , National Irrigation Board (NIB) and the Lake Basin Development Authority (LBDA) through their rice mills in Ahero, Kibos and Mwea to process and supply milled rice to supermarkets and local retailers ; Mwea Farmers Multipurpose Cooperative Society Supermarket in major urban centers,

Capwell Industries among others. There are also numerous small traders mostly women who sell rice in local market. Men, women and children are involved in rice production at various levels, while Women and Children are involved in planting, weeding, bird scaring, harvesting, threshing and drying, men are involved in land preparation (Ploughing, Rotavation and leveling). Marketing is done by men and women though women dominate the local retail rice business. Women are the central players in the rice production but hardly attend seminars or training workshops. This has brought about adverse effect on adoption and up scaling of, the technologies. Deliberate targeting of women and children for capacity building and technology transfer will enhance production and productivity. Increased production of rice will ensure food security while saving of the much needed foreign exchange, improve livelihoods of the rural and when population by creating employment opportunities for private investment and income for small scale farmers. In the past rice was not considered as strategic crop for food security. However, its production has been supported through government policy documents such on food security, such as Agriculture Sector Development Strategy (ASDS), national food and nutrition policy (NFNP) and vision 2030. These reforms are mainly geared to food security, self-efficiency and poverty reduction of the people of Kenya.

In Kenya rice consumers prefer the climatic basmati rice which also exhibit superior cooking qualities compared to the other local and imported varieties. The locally produced rice is of high quality compared to imported rice and therefore preferred by consumers. Incidences of importation of cheap poor quality rice fraudulently repackaged presenting unfair competition to locally produced rice was recently on the rise. The national consumption of rice is estimated at about 386 million kilograms based on 48 million Kenyans at eight kilograms per person year. The production is estimated at 73 million kilograms, representing a deficit of 313 million kilograms in order to bridge the gap.

Despite the fact that rice is produced under irrigation in Kenya, at Ahero Bunyala and Mwea there is still deficit for rice production to meet the local demand. This study is aimed at determining the effect of gender, Age, Education and Marital status of rice production at Ahero irrigation Scheme, Kenya.

II. METHODOLOGY

This study was carried out in Ahero irrigation scheme in Muhoroni Sub-County, Kisumu County (Kenya) the soil is black (cotton soil) which is fertile but difficult to drain. The area experiences frequent flooding menace from River Nyando due to its flat terrain. In the area nearly all the irrigated farm land is used for rice cultivation. Ahero Irrigation Scheme is managed by National Irrigation Board in partnership with farmers. Area under cultivation is 2168 acres which is divided into 12 blocks with a total of 1650 farmers (National Irrigation Board).

The study used a two-stage sampling technique. In the first stage, Ahero Irrigation Scheme was purposively selected based on their importance in terms of area under rice farming,

number of farmers and geographical location. Ahero Irrigation Scheme is geographically accessible and this is considered as a favourable factor for easy flow of information and technology, either from farmers to other rice schemes or from researchers and policy makers to farmers. Therefore, providing data and key information on how well farmers are operating in this specific scheme should impact on greater number of farmers in other schemes especially nowadays when all farmers are belonging to cooperatives.

In the second stage, a total of 285 rice farmers operating in the 2 big blocks as eastern and western blocks were randomly selected using a list from Ahero Irrigation Scheme as a sampling frame. The sample size was obtained by using the following formula from Snedecor and Cochran (1989) as below,

$$n = \frac{4pq}{(L)^2}$$

The data collected from the sample households and other sources was analyzed using Descriptive statistics and econometric models. The data was collected on socio-economic, institutional and demographic characteristics of the household. Data was analysed by using descriptive statistics presented in tables of frequencies, percentages, standard deviation, and means. The descriptive statistics were run using (SPSS) version 20.

Where n is the sample size, p is the proportion in the target population. q = 1-p and L is the accepted error. In this study, the population was the number of rice producer in a Ahero Irrigation Scheme. As has been obtained from Ahero Irrigation Scheme and the accepted error is 5.0%. For Ahero Irrigation Scheme, the target population was 2168 rice farmers of Ahero Irrigation Scheme. The total population in the scheme was 1650 rice farmers, the calculated sample size then became:

$$p = 1650/2168 = 0.7611 \quad q = 1 - 0.7611 = 0.2389 \quad L^2 = (0.05)^2 = 0.0025$$

Ahero Irrigation Scheme sample size is = $(0.7273)/0.0025 = 285$ Rice farmers.

III. RESULTS AND DISCUSSIONS

Variables	N	%
Gender		
Male	182	63.86
Female	103	36.14

Table 1: Effect of Gender on rice production at Ahero Irrigation Scheme

20 years and below	44	15.38
21 to 30 years	66	23.08
31 to 40 years	73	25.52
41 and above	103	36.01

Table 2: Effect of Age on Rice Production at Ahero Irrigation Scheme

Marital Status	N	%
Single	59	20.63
Married	209	73.08

Table 3. Effect on Marital Status on Rice Production at Ahero Irrigation Scheme.

Widowed	18	6.29
Education level		
Primary	127	44.56
College	22	7.72
Secondary	120	42.11
University never attended school	13	4.56
	3	1.05

Table 4: Effect of Education level on Rice production at Ahero Irrigation Scheme Kenya

A. INFLUENCE OF GENDER ON RICE PRODUCTION

Both male and female headed households participated in rice cultivation at Ahero Rice Irrigation Scheme. Male headed household heads were more than female headed (63.86% and 36.14% respectively) Table.1). It is well established that rice growing is laborious, hence the dominance of males in the enterprise. This can be explained by the fact that males were the households heads and were incharge of the core farm production activities, while women were mostly in processing and marketing. This findings conforms to that of (Ugwuanyi et al, 2008) in Nigeria.It also agrees with Catherine et al 2016 who reported the same findings.

B. INFLUENCE OF AGE ON PARTICIPATION IN IRRIGATED RICE

Four age groups were adopted in this research: 20 years and Below; 21 – 30 years; 31 – 40 years and 41 and above years. The majority 36.01% were aged 40 years and above followed by age 31 – 40 years at 25.52% Table 2. These results showed that the age of the farmer affected participation in rice production at Ahero Irrigation Scheme. More old people were active in rice irrigation management, and may be explained by experience in rice cultivation through having been in this scheme for a longer time. Similar outcomes were reported by various researchers (Zarafshani et al, 2008; Omid et al, 2012 in Ghana). On the other hand Chandran and Chacha cherry (2004) reported no significant effect on participation on age in Andhra Deadeeph, India. While it was reported that elderly population were more active participants, by Anaglo et al, (2014) in Ghana and Kabutha and Muteso (2012) in Kenya's Mwea Irrigation Scheme, reported that the middle age were more active than other age groups in rice irrigation management. This study found the aged (41 years and above) to be actively involved in rice irrigation management as shown in (Table 2. above).

The study results agree with Kipserem (2011) who reported that in Keiyo district, the average age of farmers in the study area was above 45 years and concluded that youth tended to shun projects that are agriculture-related and those of low monetary profits. This implied that there was no need to encourage the youth to get involved in rice production but instead to invest in rice processing, branding and marketing that could attract the youth and stem there migration to

urban.This also agrees with Mitema et al 2016. Youths are more involved in non-agricultural activities such as riding motorcycles, hence participate less in and passively involved in rice irrigation management (Mitema et al, 2016).

C. INFLUENCE ON MARITAL STATUS

Background information indicate that the majority of rice growers were married (73.08%) while only 20.63% were single participants, and only 6.29% of divorced participant farmers(Table 3). This distribution can be explained by the fact that married people quite after having more responsibilities such as food security for the household members and none food income requirements. If rice cultivated is the only business, they have no option but to keep on working harder. Conversely married women loose in commercial agriculture because the hasbunds makes decision on commercial agriculture production as compared to non-married women. (Kiriti et al 2003)

D. INFLUENCE OF FARMERS EXPERIENCE AND EDUCATION LEVEL

The education level of participants ranged from primary to university education. Results showed that the majority of the respondent had achieved primary education (44.56%) and secondary education (42.11%) (Table 4). The education level of the farming population revealed that those who had attained primary and secondary level of education actively participated in rice growing than others. Farmers who had attained tertiary education were very few. Households with primary education have proved to be more active in rice farming and secondary education have proved to participate more in rice production than those of tertiary and those who never attained school. These results deviate somehow from those obtained by Mitema et al (2016) at Mwea Rice Irrigation Scheme and West Kano Rice Irrigation Scheme where the largest percentage of farmer participants was of secondary and tertiary levels. These findings revealed that the majority of participants were both of primary and secondary education levels. Education provides the farmer with higher technical and management capabilities to absorb information technology (Nur Rasyid et al, 2016) and identified as one of the key drivers of community participation, particularly with regard to community mobilization and allocation of resources. It appears that Ahero Irrigation Scheme has low level of literacy with more in secondary and primary than tatiary and this also implies on the historical and economic factors of the area such as historical injustices.

Age, gender, marital status and level of education are major factors contributing to inefficiency among farmers in minor irrigation. Therefore skills, knowledge, entrepreneurship of the farmers need to be enhanced through awareness creation and demonstration in order to improve the farming efficiency.

IV. CONCLUSION

Young people should be encouraged to fully embrace rice farming given that they are better placed in adoption of new technologies than old people. Also deliberate efforts have to be made by both county and national governments to lure people with university education and post graduate levels into rice farming given that farmers with either university or post graduate level of education easily adopt new technologies unlike the ones with lesser education levels. Female headed households should be encouraged to seek more information on fertilizer application rates given that male headed households apply more fertilizer than their female counterparts.

Age, farming experience and level of education are major factors contributing to inefficiency among farmers in minor irrigation. Therefore skills, knowledge, entrepreneurship of the farmers need to be enhanced through awareness creation and demonstration in order to improve the farming efficiency

V. RECOMMENDATIONS

It is therefore suggested that for success of farmers in rice production area, all socio- economic constraints and related constraints should be considered and thorough training, Educational programs emphasizing on the influence of socio-economic factors in irrigated rice production should be the emphasis.

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Confluit of interest; There is no conflict of interest because the ethical review was done.

Anti-plagiarism was done if somebody had done this work and nobody was found.

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