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**An Appraisal of Socio – Economic Benefits of Irrigation Agriculture in  
Rigasa, Kaduna Metropolis Northern, Nigeria**

Abdullahi, N.

Ministry of Education Science and Technology Kaduna Nigeria

Corresponding Author E-mail & Phone No.: [abdullahbinnuhu@gmail.com](mailto:abdullahbinnuhu@gmail.com), 08065456428

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**ABSTRACT**

The main aim of this study is to appraise the socio-economic benefits of irrigation agriculture in Rigasa, Kaduna metropolis, Kaduna State. The study used Focus Group Discussion and interview methods to collect data. The study used 30 respondents from five farming communities. Thus, 6 respondents were drawn from each of the five farming communities. Simple random sampling was applied in selecting the respondents. The research with the help of assistant researcher contacted the respondents at different times for relevant information. Secondary source of data was also used to lay hand on maps, journals, books and other related materials. The study was designed to assess the demographic and socio-economic characteristics of the farmers, their income increase, ownership of land cultivated by the farmers and acquisition of the means of mobility. The data was analyzed by the use of percentages, table and bar charts. The results of the finding ascertained that most of the farmers that practise irrigation agriculture in the study areas are adults. Their level of education is not up to secondary school. Irrigation agriculture benefited the farmers in different dimensions such as increase in their income, acquisition of farm lands through purchase, ability to own personal means of mobility among others. The following recommendations are made: empowerment to the adult should be made to boost their irrigation agriculture as they are the dominant irrigation farmers. Loans and other financial supports should be encourage in order the farmers to acquire farmlands for farming policy makers and extension worker should provide a means of buying the farm produce from the irrigations farmers so as to boost their income. Finally, mobility is very vital for farmers, there special loan inform of vehicle loan should be put into consideration in order to allow the irrigation farmers to have easy access of ownership of mobility for easy transportation of their farm produce.

**Keywords:** irrigation, cultivation, fertilizer, farmland, acquisition, manure, Kaduna state.

**1.0 INTRODUCTION**

Agriculture is key development in the rise of sedentary human civilization where by farming of domesticated species created food surpluses that enable people to live (Denham, 2003). The history of agriculture dates back to thousand years, people gathered wild grains and began to plant them before they became domesticated. Sheep, goats, cattle, pigs were domesticated over thousands of years (Bocquet, 2011).

Modern agronomy, plant breeding, agro chemical such as pesticides and fertilizers and technological developments have sharply increased yields from cultivation. Selective breeding and modern practices in animal husbandry have similarly increased the output of meat.

The development of agriculture enable the human population to grow many times larger than could be sustained by hunting and gathering. (Gerritsen, 2008) Agriculture not only provides food and employment but also serves as a source of food and fodder supply, raw materials, source of savings, employment opportunity, foreign exchange resources, marketable surplus, government income, and basis for economic development among others.

Human expansion throughout the world caused agriculture to be dominant from of land management globally. Human also have influence on land and other natural resources resources because of rapid population growth and increasing food requirements (Radoslava, 2016).

Irrigation practice across the world is vital to successful green revolution all year round to achieving sustainable development goals in food security, socio – economic and rural development (Bashir and Kyung, 2019).

Increased adoption of irrigation is often considered critical for agricultural transformation in countries in Africa South of the Sahara such as Nigeria (Hiroyiki and Margare (2015).

Irrigation has been a central feature of agriculture for over 5000 years and is the product of many cultures (Williams *et.al*, 2007). Irrigation agriculture plays a fundamental role as a supplier of food and raw materials and it is the world's largest water user (Juan *et al*, 2019). Irrigation helps to grow agricultural crops, maintain landscapes, revegetate disturbed soils in dry areas and during periods of less than average rainfall, frost protection, suppressing weed growth in grain field, preventing soil consolidation, dust suppression among others (Lawton and Wike, 2012).

Nigeria like other countries of the world most especially the Northern Nigeria, irrigation farming is practised extensively by the farmers (Nuhu, 2010). Nigeria like other tropical countries has a vast diversity of climate, topography and vegetation. The occurrence of rainfall in Nigeria varies from one place to another. In some places the rainfall is highly erratic and irregular especially in the northern part of Nigeria. The use of irrigation is inevitable in order to have successful crops production. Thus, irrigation plays a vital role to agriculture, particularly in the more marginal northern region for the local production of high value perishable and perhaps for rice and some other export crops (Nuhu, 2010).

Several studies have been conducted on the benefits of irrigation in both rural and urban agriculture. Irrigation has contributed significantly to poverty alleviation, food security and improving the quality of life for rural and urban population. Additionally it enhances the income of the farmers, multiple harvest, and good returns. (Fakayode *et, al* 2010). In the village of Chakunda in Gambia, Webb (1991) identified some benefits of irrigation farming which comprises increase in income which gave way for increase expenditure, investment, trade, purchase

of irrigation products, cloth, Jewelry, increase in material wealth comprise expenditure wealth among others. FAO (1997) also discovered some benefits from small holder irrigation in Zimbabwe. In the socio economic impact assessment of Hamma, Mavhaire, Hoyuyu and Nyaitenga irrigation scheme in Zimbabwe. It is observed that farmers income from irrigated agriculture is significantly higher than income of dry land farmers. This indicates that there is more intensive crop production in irrigation schemes than dry land agriculture in these settlements.

From a social point of view farmers in irrigation scheme in Zimbabwe were discovered to be far much better off in comparison with labourers working in urban industries who are faced with a lot of other demands such as rent, water and electricity charges.

The core end of this study is to appraise the socio-economic benefits of irrigation agriculture in Rigasa. The study is restricted to Rigasa simply because irrigation agriculture is highly practised by the farmers living around the rivers that pass through Rigasa. The study also has the following objectives: assessing the demographic and socio-economic characteristics of the respondents, to examine the ownership of land cultivated by the farmers, to examine the income increase of the farmers and to examine the acquisition of means of mobility by the farmers.

## 2.0 The Study area

The study area is found in Igabi local government of Kaduna state. The study area constitutes five farming communities; Hayin Mallam Bello, Nariya, Hayin Dan Mani, Keteren Gurgu and Keteren Island. The farming communities use the alluvial plains of River Rigasa and River Afaka for their farming activities. Kaduna state is located within latitude 10° 25' 27" N to latitude 10° 35' 29" N and longitude 7° 22' 27" E to longitude 7° 30' 27" E. Igabi local government is bounded in the North by Zaria local government, in the west by Birnin Gwari local government, in the east by Soba local government, in the south-east by Chikun local government, and in south by Kaduna south local government. Its climate is tropical wet and dry. The wet season is between May and October and the dry season is between end of October to early May. The



### 4.0 RESULTS AND DISCUSSIONS

Table 1 represents demographic and socio-economic characteristics of the respondents. The table clearly indicates that Nariya recorded 33.3% of the adult farmers. This shows that among the five farming communities, irrigation agriculture is mostly practised by the adult in Nariya. The oldage in Hayin Mallam Bello and Ketaren Gurguzu have highest percentage of 33.3% among the five farming communities. Thus, adult’s participation is less than the old age in the two study areas. Respondents with primary school education have 16.7 each in Nariya, Ketaren Gurguzu and Ketaren Island. Those opportuned to have secondary

education have 16.7% in Hayin Dan Mani. The highest percentage for others like Qur’anic education, adult education and vocational education have 33.3% in Hayin Dan Mani. On the other hand about 33.3% in Nariya have their annual income less than 100,000 while farmers whose annual income is more than 100,000 have 50% in Ketaren Island as the highest percentage in the five study areas. However, this study shows that farmers’ annual income differs among the five farming communities. This could be attributed to the type crop planted, nature of harvest, size of the farm land among others and Socio – economic characteristics of the respondents.

**Table 1: Demographic and Socio-Economic Characteristics of the Respondents**

| Variable                        | Hayin m. Bello | %    | Nariya | %    | Hayin Dan Mani | %    | Ketaren Gurguzu | %    | Ketaren Island | %    |
|---------------------------------|----------------|------|--------|------|----------------|------|-----------------|------|----------------|------|
|                                 | Resp.          |      | Resp.  |      | Resp.          |      | Resp.           |      |                |      |
| Adult                           | 1              | 16.7 | 2      | 33.3 | 0              | 0    | 0               | 0    | 0              | 0    |
| Old Age                         | 2              | 33.3 | 0      | 0    | 1              | 16.7 | 2               | 33.3 | 1              | 16.7 |
| Primary School                  | 0              | 0    | 1      | 16.7 | 0              | 0    | 1               | 16.7 | 1              | 16.7 |
| Secondary School                | 0              | 0    | 0      | 0    | 1              | 16.7 | 0               | 0    | 0              | 0    |
| Others                          | 1              | 16.7 | 1      | 16.7 | 2              | 33.3 | 0               | 0    | 1              | 16.7 |
| Annual income less than 100,000 | 1              | 16.7 | 2      | 33.3 | 1              | 16.7 | 1               | 16.7 | 0              | 0    |
| Annual income above 100,000     | 1              | 16.2 | 0      | 0    | 1              | 16.7 | 2               | 33.3 | 3              | 50   |
| Total                           | 6              | 100  | 6      | 100  | 6              | 100  | 6               | 100  | 6              | 100  |

Table Source: field work 2018

1:

**Table 2: Ownership of farmland cultivated by farmers**

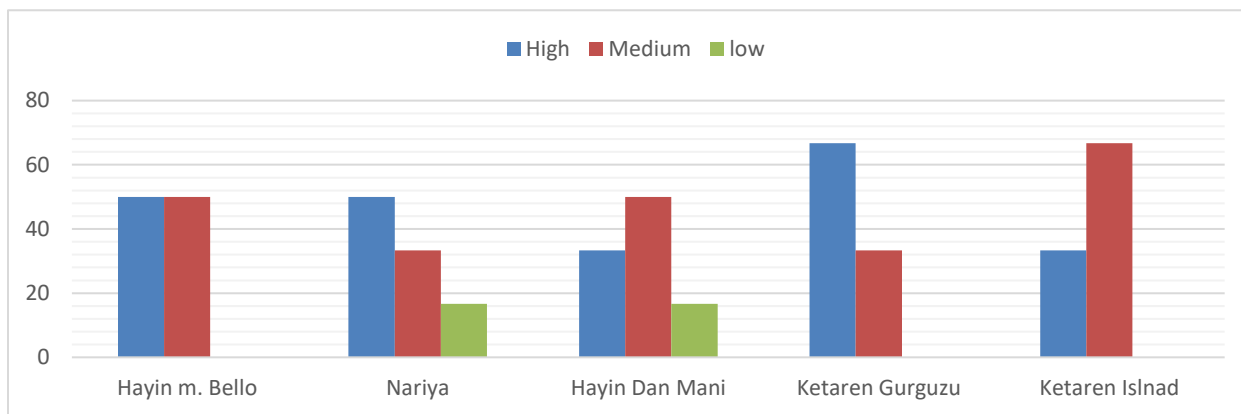
| Ownership | Hayin M. Bello No. of Resp. |      | Nariya No. of Resp. |      | Hayin Dan Mani No. of Resp. |      | Ketaren Gurguzu No. of Resp. |      | Ketaren Island No. of Resp. |      |
|-----------|-----------------------------|------|---------------------|------|-----------------------------|------|------------------------------|------|-----------------------------|------|
|           | farmers                     | %    | farmers             | %    | farmers                     | %    | farmers                      | %    | farmers                     | %    |
| Rented    | 1                           | 16.7 | 0                   | 0    | 2                           | 33.3 | 1                            | 16.7 | 0                           | 0    |
| Purchased | 3                           | 50   | 4                   | 66.7 | 3                           | 50   | 2                            | 33.3 | 2                           | 33.3 |
| Inherited | 1                           | 16.7 | 1                   | 16.7 | 1                           | 16.7 | 1                            | 16.7 | 2                           | 33.3 |
| Gift      | 0                           | 0    | 1                   | 0    | 0                           | 0    | 0                            | 0    | 2                           | 33.3 |
| Pledge    | 1                           | 16.7 | 0                   | 0    | 0                           | 0    | 2                            | 33.3 | 0                           | 0    |
| Total     | 6                           | 100  | 6                   | 100  | 6                           | 100  | 6                            | 100  | 6                           | 100  |

Table 2 portrays the ownership of the farmlands cultivated by the farmers. It is shown that in Hayin Mallam Bello 50% of the farms are purchased by the farmers. This shows that income of the farmers opportuned them to purchase farm lands for their

farming activities. In Nariya 66.7% constitute the percentage of those whose ownership is through purchase. It is also the same in Hayin Dan Mani where ownership of farm got 50% through purchase for Ketaren Gurguzu and Ketaren Island their farm

ownership is 33.3% each for purchase respectively. Thus, this ability to purchase the farmlands by the

farmers shows the level of their income from the irrigation agriculture in their localities.



**Figure 2: income increase of the farmers Study Area**  
Source: field work 2020

Figure 2 highlights on the increase of the farmers' income. It shows that farmers in Ketaren Gurguzu constitute 66.7% for those whose income from irrigation farming is high. On the other hand those farmers whose income is moderately increased got 66.7% in Ketaren Island. Thus, farmers in both Ketaren Island and Ketaran Gurguzu experience high increase in the level of their income. However, farmers in Hayin Dan Mani and Nariya got 16.7% each for farmers whose income is low compared to their counterparts. This shows that a big gap exist between those whose income increase is high and those with low income increase. This study is in

line with the research of Rosegrant (1992) on the Impact of Irrigation on production and income variability in Philippines.

Zandile *et al* (2019) in their studies discovered that Job opportunities, income increment, food diversification and share cropping were among the benefits of irrigation agriculture in the Eastern cape province (South Africa) of the rural communities. The study is in line with findings of Zandile that because the farmers in the present study also witnessed increase in their income.

**Table 3: Acquisition of means of mobility by the framers**

| Means of Mobility | Hayin M. Bello<br>No. of Resp. |      | Nariya<br>No. of Resp. |      | Hayin Dan Mani<br>No. of Resp. |      | Ketaren Gurguzu<br>No. of Resp. |      | Ketaren Island<br>No. of Resp. |      |
|-------------------|--------------------------------|------|------------------------|------|--------------------------------|------|---------------------------------|------|--------------------------------|------|
|                   | Farmers                        | %    | farmers                | %    | Farmers                        | %    | farmers                         | %    | farmers                        | %    |
| Bicycle           | 1                              | 16.7 | 1                      | 16.7 | 1                              | 16.7 | 2                               | 33.3 | 1                              | 16.7 |
| Motorcycle        | 4                              | 66.7 | 3                      | 50   | 1                              | 16.7 | 3                               | 50   | 3                              | 50   |
| Car               | 1                              | 16.7 | 1                      | 16.7 | 3                              | 50   | 0                               | 0    | 1                              | 16.7 |
| KekeNapep         | 0                              | 0    | 2                      | 33.3 | 0                              | 0    | 0                               | 0    | 0                              | 0    |
| Donkey            | 0                              | 0    | 0                      | 0    | 1                              | 16.7 | 1                               | 16.7 | 1                              | 16.7 |
| <b>Total</b>      | 6                              | 100  | 6                      | 100  | 6                              | 100  | 6                               | 100  | 6                              | 100  |

Source: field work, 2020

Table 3 points out farmers' acquisition of means of mobility. Farmers in Hayin Mallam Bello got 66.7% for those that acquired motorcycle. It shows

that most of the farmers in Hayin Mallam Bello have access to own motorcycle.

The percentage of farmer in Nariya reach up to 50% for those that own motorcycle.

However, in Hayin Dan Mani those that are accessed to car constitute 50%. The farmers in Ketaren Gurguzu who got motorcycle composed 50%. Thus, most of the farmer got motorcycle as their means of mobility. However, motor cycle acquisition appeared to be 50% for the farmers in Ketaren Island as the highest percentage compared to other means of mobility. It is observed that despite the fact that the farmers are accessed to other means of mobility but most of them are inclined to motorcycle acquisition.



**Plate 1: An irrigated farm in Hayin Gurguzu**  
Source: Author's field work 2020



**Plate 3: An irrigated farm along river Ketaren Island**  
Source: Author's field work 2020



## 5.0 CONCLUSIONS AND RECOMMENDATIONS

Irrigation across the world is very essential as far as food security is concerned. It gives support to rainfed agriculture worldwide. From the foregoing findings, it is revealed that in the five farming communities the practice of irrigation is mainly done by the adults (33%) even though there are people of old age that participates in the irrigation is practiced farming communities. This shows that irrigation is practiced by the categories of people. The study further discovered that most of the farmers owned their cultivated land through purchase (66.7%). This indicates how serious the farmers are because it gives them encouragement to farm on ones own land instead of rented land. The study also highlighted on the farmers income increase, where the study discovered that most of the farmers have increase in their income (66.7%). However mobility is very vital as far as farming is

concerned. This is because mobility enhances the movement of farm produce from the farm to the house or market. Thus, the means of mobility acquired by the farmers is mostly motorcycle, even though there other means of mobility acquired by the farmers.

In light of the above findings the following recommendations are made: empowerment to the adult Should be made to boost their irrigation agriculture as they are the dominant irrigation farmers. Loans and other financial supports should be encourage in order the farmers to acquire farmlands for farming policy makers and extention worker should provide a means of buying the farm produce from the irrigations farmers so as to boost their income. Finally mobility is very vital for farmers, there special loan inform of vehicle loan should be put into consideration in order to allow the irrigation farmers to have easy access of ownership of mobility for easy transportation of their farm produce.

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