Analysis of Youth Participation in Irrigation Farming for Enhancing Food Security in Adamawa State, Nigeria

Usman, J., Madu, A. U., Wadzu, A. J., Haddabi, A. S. and Shelleng, B. A.

Department of Agricultural Economics and Extension, Faculty of Agriculture, Adamawa State University, Mubi. Adamawa State, Nigeria.

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ABSTRACT

This research work analysed the Youth participation in irrigation farming for enhancing food security in Adamawa State, Nigeria. It focused on the following specific goals, to: determine the socio-economic features of youth involved in irrigation farming in the study area;analyse the factors influencing youth involved in irrigation farming in the study area; and identify the challenges face by youth in participating in irrigation farming for enhancing food security in Adamawa state, Nigeria**.** Purposive and simple random sample approaches were adopted in selecting the respondents Via questionnaire in the four Agricultural zones of Adamawa state. The findings of the study revealed that over 56% of the respondents were between the age of 27 and 29 with over 60% of youth attaining formal education and more than 78% being married. The poor knowledge of irrigation, socio-cultural factors, disease outbreak and experience were significant at 1% level of significance and were found to be the major factors affecting the youth participation in irrigation farming. Similarly, inadequate access to financial services especially credit, high cost of inputs, were the major challenges faced by Youth participation in irrigation farming while difficulties in accessing market was the least in the study area. Based on the findings the study recommends strong linked between financial institutions, cooperatives and youth participating in irrigation farming to facilitate their access to credit, agricultural inputs and improved management strategies.

Keywords: Food security, Irrigation farming, Nigeria, Youth, Socio-economic

INTRODUCTION

Background to the Study

In many agricultural nations, youth and agriculture continue to be significant topics in national debates. The United Nations (UN, 2025) defines youths as those in the age range of 15 to 24 years. Nevertheless, the phrase varies a little bit depending on the nation. Those in Indonesia between the ages of 18 and 30 years are considered as youth. In contrast to the UN and Ghana and several other African nations classified youth as individuals between the ages of 15 and 35 years (Naamwintome and Bagson, 2013). In Nigeria, on the other hand, youth are Federal Republic of Nigeria citizens between the ages of 18 and 29 years (New Youth Policy, 2019). Young people constitute a high and increasing population of the African continent with around 70 percent of the total population under 30 years Manikas, et al (2023). According to International Labour Organization, Ogunniyi, et al (2024) 60% of African unemployed people are youth. In Nigeria the youth unemployment rate was 5.13% as at January 2025. According to statistics provided by 2024 Cadre Harmonise report, over 31.8m Nigerians are suffering from acute food insecurity compounded with malnutrition among women and children in the Country. The surge in food commodity prices which is as a result of the removal of fuel subsidy in addition to security challenges has placed millions of Nigerians in a precarious situation. The northern part of Nigeria is prone to periodic droughts, where a good percentage of the country's agricultural produce emanates. However, the central and southern parts are prone to periodic floods**.** Although, the government has embarked on various policies to curb the effects of these disasters, the adverse effects on agricultural output and the vulnerability of the rural populace are striking Nemine, (2015).

The deliberate application of water to soil or land is known as irrigation. It is used in arid regions and during times of little rainfall to help re-vegetate disturbed soil, maintain landscapes, and aid in the growth of agricultural products. According to Eisenhaver et al. (2021), irrigation is the artificial provision of water to crops. Its purpose is to counteract dehydration in semiarid sections of sub humid regions and to allow desirable plant development in arid locations. Stable food production is made possible by irrigation. Irrigation extends the growing season in some places. 21% of the world's farmed land is irrigated, producing one-third of the world's food (FAO, 2021). About half of the overall crop sales value in the United States in 2012 came from irrigated agriculture, which was planted on 28% of harvested crop land (USDA, 2019). Many of the most fertile and arid places on earth have been transformed into significant crop-producing areas by irrigation; Egypt is a prime example. The irrigation practice in Nigeria can be traced back to 700 AD (Olubole, Awosola and Idowu, 2004). In Nigeria, irrigation schemes and projects consist of three categories, the public irrigation schemes, which are government executed schemes, the farmer-owned irrigation scheme and the flood plains called Fadama irrigation scheme. One of the largest irrigation projects in Nigeria, the Kano River irrigation project (144,444 hectares) was started in 1970 under the Hadeja-Jama'are River Basin and Rural Development. It is an example of a well-known irrigation system in Nigeria. The other two are the 12, 000-hectare Lake Chad irrigation project in Borno State and the 23, 300-hectare Bakolori irrigation project in Zamfara State. Approximately 250,900 hectares of land in Adamawa State are utilised for irrigation. Shelleng Local Government Area, Lamurde Local Government Area, Numan Local Government Area, and Fufore Local Government Area are some of the major irrigation regions in the state. The main water sources for irrigation in Sehelleng LGA was the Kiri dam, while ground water in the form of wells and boreholes were the sources of water for irrigation purposes in Lamurde, Numan and Fufore Local Government Area respectively. The state's irrigated farming are the River Benue, Kiri, Kilange, Mayo Inne, Chouchi, and Lake Geriyo.

Young people are, both practically and theoretically, the best investment for the growth of a nation. This is because they have the capacity to get over a few significant obstacles in order to increase the output of agriculture. They may work in agriculture in a variety of ways, including owning their own farm, working as farm labourers, working on the family farm, working for a firm that provides agricultural services, or starting their own farm. Young people are crucial in the labour supply, material contribution, project start, timely attendance at meetings, and use of initiative to get outside assistance. Adamawa State has long been heavily dependent on the agricultural sector, with agriculture playing a crucial role in providing food, generating employment, and contributing to its economic development. However, the recent happenings and a forecasts for the next few decades are warning about shortage of water and food. The demand for food will continue to increase because of population growth. The problem is reinforced by the lack of water and reduction in food production. Irrigation is a key factor in improving food security in Adamawa State, which is heavily dependent on rain-fed agriculture. However, the State's food security is still a challenge due to climate change, water scarcity, and other factors. Farmers may now produce more lucrative cash crops or larger yields of current crops thanks to the development of irrigation systems. The danger of unpredictable rainfall is reduced by building a system of water storage and convergence. When farmers can forecast the amount of water that will be available, they may better plan their crop rotation strategies. Additionally, farmers may apply water when it is most helpful for crops thanks to irrigation, as opposed to being dependent on variations in rainfall. If the majority of production efforts are left in the hands of elderly subsistence farmers—who now make up the majority of the agricultural population—the future of agriculture for the majority of emerging nations may be dismal. Due to their advanced age, elderly farmers will undoubtedly be phased out as their production levels cannot support the constantly expanding population's requirements for food and fiber. In light of this and the significance of irrigation in food security of the state, it is necessary for this research to examine the factors affecting youth engagement in irrigation in Adamawa State, Nigeria.

Statement of the Problem

Global irrigation practices are essential to the green revolution's success as well as the achievement of sustainable development objectives in the areas of rural development, socioeconomic uplift, and food security. Over the last fifty (50) years, irrigation has raised living standards and enhanced food security in many regions of the globe (Adelodun and Sook Choi, 2018). Unquestionably, irrigation increases productivity by expanding the amount of land that may be used for agricultural production. There is evidence that the expansion of irrigation systems has

resulted in more job prospects in many places. Despite significant land and water availability in Adamawa State for irrigation purposes, due to quite number of reasons like limited access to resources, lack of awareness, and the perception that agriculture is not a lucrative or attractive career option. According to Lebdi (2016), the irrigation industry has not yet made a significant contribution to balancing the supply and demand of food, which would help farmers and provide employment for young people in particular.

From the foregoing, irrigation practice seems to be very important for national food security and coupled with dwindling performance of the aged farmers, there is the need for adequate participation of youth in irrigation to help achieve food security. In Adamawa State, areas of irrigation farming that require the input of youth are: Technology adoption; implementing modern irrigation techniques such as drip irrigation systems and sensor-based monitoring; Crop diversification: introducing new crops suitable for irrigation to diversify agricultural production and increase resistance to climate changes; value addition and marketing; developing value-added products from irrigated crops and establishing efficient marketing channels to reach wider market. While the gap in research that needs to be filled in Adamawa state are; Crop-water interaction studies; understanding the water requirements of different crops under varying environmental conditions to optimise irrigation scheduling. Soil management techniques; investigating soil health and fertility management practice tailored to irrigated agriculture to maintain long-term productivity. Climate resistance; studying the impact of climate change on However, youth in Adamawa do not seem to be fully involved in irrigation farming to tap from its numerous advantages, this study therefore, is design to analyse the Youth Participation in Irrigation Farming for Enhancing Food Security in Adamawa State, Nigeria.

Objectives of the Study

The main objective of this study is to analyse the Youth participation in irrigation farming for enhancing food security in Adamawa State, Nigeria. While the specific objectives include to:

i. determine the socio-economic features of young people involved in irrigation farming;

ii. analyse the factors affecting young people involved in irrigation farming;

iii. identify the difficulties face by young people involved in irrigation farming in the study area.

METHODOLOGY

Study Area

This research was conducted in Adamawa State. The state of Adamawa is situated in north-eastern Nigeria. According to Adebayo et al. (2020), it is located between latitudes 7° 15' and 10° 58' N of the equator and longitudes 11° 09' and 13° 47' E of the Greenwich Meridian. Boundaries with Borno to the north, Gombe State to the northwest, and Taraba State to the south and west. The Cameroon Republic has an international border with Adamawa State on its eastern side. About 39, 972.3 km² and 2,873,000 hectares of arable land make up the State's total land area (Nigerian Bureau of Statistics, 2019). Approximately 250,900 hectares of this are irrigated. URBDA, the Upper Benue River Basin Development Authority, 2017. Assuming a constant population growth rate of +2.94% each year, the population density of Adamawa state was 99.5 persons per km². According to the National Bureau of Statistics (2022) and the National Population Commission of Nigeria (2022), Adamawa State has 4, 902,100 residents.

Adamawa State consists of 21 Local Government Areas with four agricultural zones. The zones are as follows: Zone I (Maiha, Mubi North, Mubi South, Michika and Madagali LGAs), Zone II (Gombi, Hong, Girei, and Song LGAs), Zone III (Ganye, Toungo, Fufore, Yola South, Yola North, Jada and Mayo-Belwa LGA) and Zone IV (Numan, Demsa, Lamurde, Guyuk and Shelleng). Adamawa State has a tropical wet and dry climate.Dry season lasts for Minimum of five months (November - March) while the wet season spans April to October. The movement of the Inter Tropical Discontinuity (ITD) and its associated zones of rainfall during the course of the year is the major factor controlling rainfall in the State (Adebayo, 2020). Between November and January, the ITD is in its most southerly position (at about latitude 2 – 5°N). During this period, the whole of Adamawa State is under the influence of dry, continental and relatively stable air masses from the northeast (the hamattan). There

is hardly any rainfall received between November and February in the State. As the Inter Tropical Discontinuity (ITD) advances northward, some part of Adamawa starts receiving rainfall in small amount in March. The mean monthly rainfall in the northern part of the State ranges from 5.8mm to 269.6mm, in the Central zone it ranges from 3.7mm to 200.8mm while in the southern zone, it ranges from 29.8mm to 257.0mm (Adebayo et al., 2020). The major vegetation formation in the state is the Southern Guinea Savannah, Northern Guinea Savannah and the Sudan Savannah, within each formation is interspersion of thickets, tree Savannah, open grass Savannah and fringing forests in the river valleys climatically, and edaphically, Adamawa is quite variable, and so are the distributions of food and cash crops. The major food crops of Adamawa State include, Cereal (Maize, Sorghum, Rice etc), legumes (Groundnut, cowpea, Bambara nut, Soyabean), oil seed (Sesame, groundnut, cotton etc) and root (yam, cassava, sweet potatoes, cocoyam etc) while the cash crops are mainly cotton, groundnut, cowpea and sugar cane (Adebayo et al., 2020).

Irrigated agriculture is increasingly becoming more popular in Adamawa State, as its advantages are glaringly noticeable. Major irrigation areas of the State are; Shelleng local Government (Shelleng, Ketembari, Talum), Lamurde Local Government (Gyawana, Tingni, Waduku), Numan local Government (Gwalam, Vulpi, Numan), Demsa local Government (Borrong, Dung, Dwam), Yola North Local Government (Geriyo, Vunoklang), FuFore local Government (Tambajam, Chigari, Ribadu), Michika Local Government (Dzuruk, Dilchim, Washili), Mubi-North local Government (Muchalla, Digil, Hurida) etc. (Adebayo et al., 2012). Kiridam constructed on River Gongola for irrigation purposes is the main standard dam for domestic water supply in the state. Most of the water schemes in the state are based on ground water in form of wells and boreholes. The occurrence of ground water in the state varies from place to place both in quantity and quality depending on the geological, climatic and other environmental factors (Adebayo, et al., 2020).

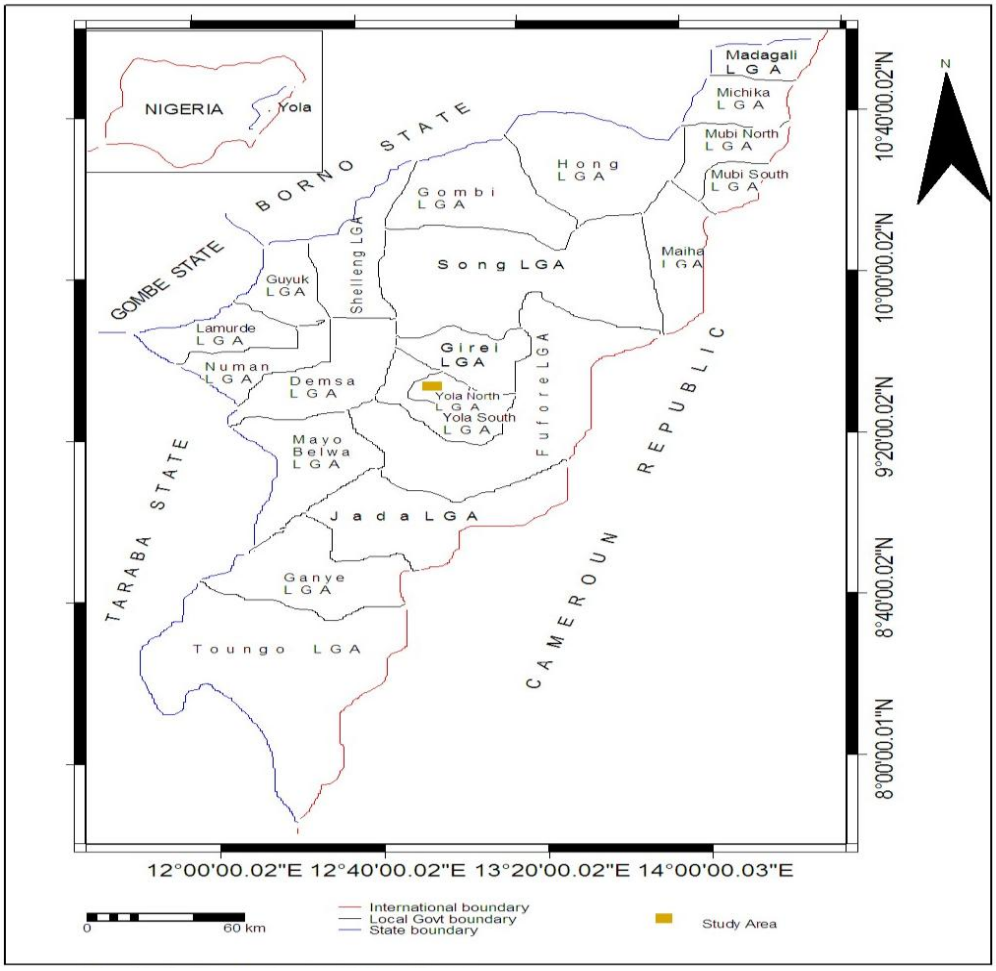

Figure 1: Map of Adamawa State showing the study areas
Source: Adebayo et al.(2020).

Sampling Techniques and Sample Size

A purposive and simple random sampling techniques were adopted for the selection of respondents for this study. A purposive selection of two LGAs From the four (4) Agricultural zones was made base on of their high level of participation in irrigation farming. Sixteen wards (16) two each from the eight LGAs were selected. A sample size of 250 respondents were drown using simple random sampling in proportionate to the total registered irrigated farmers (Fadama II AF 1; 2022).

Method of Data Collection

The data for this study was collected from primary source with the aid of well-structured questionnaire using Kobo collect. The adoption of Kobo collect data collection platform added efficiency, reliability, quality control and very high response rate. The data was collected on socio-economic attributes of the youth with respect to irrigation farming, factors affecting youth participation in irrigation farming and also problems associated with youth participation in irrigation farming activities for enhancing food security in the study area. The data was collected for 2024/2025 irrigation cropping season.

Analytical Techniques

Descriptive and inferential statistics was employed to achieve the objectives of this study. Descriptive Statistics was used to achieve objectives I, and III. This involved the use of measures of central tendency such as mean, frequency distribution, percentages and ranking. Inferential statistics involve the use of Logit Regression which was used to achieve objective II.

The logit regression equation estimate is expressed as;

$$\text{Logit}([Y/X]) = \text{logit}\,(Y_i) = \log\left(\frac{Y}{1-Y}\right) = \beta o + \beta_1 X_{i1} + - - - + \beta_{10} X_{i10} + e_i$$

Where;

Y = the probability of full-time participation in irrigation farming by the youth which takes the value of 1 while 0 is the probability of not participating full-time (i.e. Probability of part time participation). Full time was coded = 1 and Part time was coded = 0.

$\log\left(\frac{Y}{1-Y}\right)$ = log odds of full-time participation in irrigation farming

X1 = Lack of interest in Farming (Yes = 1 or No = 0)

X_2= Poor Knowledge of irrigation techniques (Yes = 1 or No = 0)

X_3 = Social Cultural factor (Yes = 1 or No = 0)

X4 = Disease outbreak (Yes = 1 or No = 0)

X5 = Insufficient water for irrigation (litters)

X6 = Experience in irrigation farming (years)

X7 = Inability to access credit (Yes = 1 or No = 0)

X8 = High cost of labour (₦)

X9 = High cost of operation (₦)

X10 = Drudgery and time consuming (Hour)

P = Probability of participation in irrigation farming

Ln = Natural logarithm function

βo = Constant

$\beta_1 - \beta_{10}$ = Regression coefficients

X_1-X_{10} = Explanatory variables

i = stands for observations, i.e., I = 1,2,3,……..10.

e = error term

RESULTS AND DISCUSSION

Socio-Economic Characteristics of Youth Participating in Irrigation Farming

The socio-economic characteristics of the youth in irrigation farming; (age, gender, education level) were discussed based on the responses obtained from the respondents.

Table 1: Distribution of irrigation farmers according to gender

Variable	Frequency	Percentage
Sex		
Male	377	98.69
Female	5	1.31
Total	382	100

Source: Field Survey, 2023.

The gender distribution of youth irrigation farmers presented in Table 1. 1indicates a notable disparity, with males accounting for the majority (98.69%). This is consistent with the broader trend observed in many agricultural contexts, where male participation is traditionally more prevalent due to cultural norms, access to resources, and land ownership patterns. The result is in line with Kimaro et al.(2015) who reported that women are less involve in vegetable and cowpea cultivation which required more physical strength. This imply labour division with both spouse involved in tasks that can be divided more effectively leading to increased productivity and the ability to manage large farms or more intensive farms practices.

Table 2: Distribution of respondents of irrigation farming by Age

Variable	Frequency	Percentage
Age	23	6.02
18-20	33	8.64
21-23	109	28.53
24-26	217	56.81
27-29	382	100
Total		

Source: Field Survey, 2023.

The age distribution of youth irrigation farmers in Table 2 reveals a diverse range of participants. The majority (56.81%) falls within the age groups of 27 to 29, while those within 24 to 26 constitute(28.53%). this indicates that a substantial portion of the youth are engaged in irrigation farming. suggesting that they are in the early stages of adulthood and potentially in their prime physical and mental capacity for agricultural activities. This result suggest that the right audience (youth) was targeted and it is an indication that youth really engaged in irrigation farming in Adamawa State. This is also in agreement with Agboola et al. (2015) who found that 65% of the respondent were below 30 years.

Table 3: Distribution of respondents Educational Level

Variable	Frequency	Percentage
Educational qualifications	145	37.96
Non formal Education	104	27.23
Primary Education	120	31.41
Secondary Education	13	3.4
Tertiary Education	382	100
Total		

Source: Field Survey, 2023

The educational qualification of the respondents as presented in Table 3. indicates that more than 60% of the farmers were educated. This is an indication that they had the capacity to engaged in modern irrigation farming given every available resource because they can read and write, and therefore can understand and follow instructions on the use of agricultural resources as they relate to irrigation farming. Dorcho et al. (2022) reported that more educated youth are expected to adopt new technologies in order to increase their land and labour productivity.

Table 4: Distribution of respondents Marital Status

Variable	Frequency	Percentage
Marital Status	1	0.26
Divorced	301	78.8
Married	73	19.11
Single	7	1.83
Widow/Widower	382	100
Total		

Source: Field Survey, 2023.

The distribution of the respondents based on marital status as shown in Table 4 indicates that 78.8% of the respondents were married and only 19.1% were single. This means that majority of those youth who engages in irrigation farming were married. Moreover, only 1.8% and 0.3% of the respondents are widows and divorcer respectively. The fact that majority of the youth farmers were married means that they had to engage in some

productive ventures to be able to cater for the welfare of their families, hence engaging in irrigation farming. This agreed with the findings of Darcho et al.(2022) that larger (76.2%) percentages of irrigation farmers were married. This implies that married youth are more likely to participate in agricultural activities than unmarried ones. This is because married persons have more family obligations than unmarried persons.

Table 5: Distribution of Irrigation farmers by farming Engagement type

Variable	Frequency	Percentage
Farming Engagement	366	95.81
Full time	16	4.19
Part-time	382	100
Total		

Source: field Survey,2023.

Table 4 also shows distribution of the farmers according to their engagement in farming. Majority, constituting 95.8% are full time farmers while 4.2% are part-time farmers. The result categorizes their engagement into two groups: full-time and part-time. This allows us to understand the dedication of these youth to farming and how their commitment aligns with their livelihood strategies within the rural context. This category suggests that a minority of the surveyed youth may be supplementing their income or engaging in other activities alongside farming. This aligns with the broader rural context where diverse income sources are often necessary to ensure economic stability (Ajadi et al., 2019). This imply increased food production. More people dedicated to farming or irrigation farming can lead to increased agricultural productivity, contributing to food security and reducing dependency on imports.

Table 6: Logit Regression Analysis of Factors Affecting Youth Participation in Irrigation Farming

Dependent variable: Youth participation (measured by the Engagement type either full or part time)	Coefficient (Odds Ratio)	St.Err.	t-value	p-value
Lack of interest in farming	1.405	1.086	0.440	0.660
Poor knowledge of irrigation	12.333	9.489	3.270	0.001***
Socio cultural factor	8.388	5.507	3.240	0.001***
Disease out break	0.032	0.032	-3.490	0.000***
Insufficient water for irrigation	1.609	1.212	0.630	0.527
High cost of labour	0.842	0.667	-0.220	0.828
Inability to access credit	1.044	1.010	0.040	0.964
High cost of operation	1.315	0.918	0.390	0.695
Drudgery and time consuming	0.522	0.650	-0.520	0.602
Experience	1.276	0.104	2.990	0.003***
Constant	1.041	1.699	0.020	0.980

Mean dependent var	0.937	SD dependent var	0.243
Pseudo r-squared	0.434	Number of obs	382
Chi-square	68.009	Prob > chi2	0.000
Akaike crit. (AIC)	163.382	Bayesian crit. (BIC)	214.673

Source: Author's computation using Stata 15. Note: *** Indicates significance at 1% level where p<.01

Factors Affecting Youth Participation in Irrigation Farming in Adamawa State

The results of the logit regression analysis presented in Table 6 provide insights into the factors affecting youth participation in irrigation farming in Adamawa State. Each coefficient's sign, standard error, t-value, and corresponding p-value offer valuable information about the significance and direction of the relationships between the independent variables and youth participation. The odds ratios associated with each variable provide a comprehensive perspective on how different factors affect youth participation.

Among the factors examined, Poor knowledge of irrigation techniques emerges as a significant determinant of youth participation in irrigation farming. The coefficient of 12.333 suggests that a lack of knowledge about effective irrigation practices is associated with a lower likelihood of youth engagement in this farming method. This aligns with Dauda et al. (2009), who emphasize the importance of technical expertise for successful irrigation farming. In this analysis, the odd ratio of poor knowledge of irrigation farming given as 12.333 means that, compared to those with adequate knowledge of irrigation techniques, young individuals with limited knowledge were approximately 12.3 times less likely to engage in irrigation. Essentially, this high odd ration indicates that the level of knowledge in irrigation techniques significantly affect youth participation. This implies that youth individuals with little understanding of technical aspect of irrigation may perceive it as a complex of risky endeavor and as a result may be less inclined to participate. Policymakers can prioritize knowledge dissemination programs that equip youth with the necessary skills to optimize irrigation practices and enhance participation.

Socio-cultural factors show a coefficient of 8.388, indicating a significant positive influence on youth participation. This finding resonates with Geza et al. (2021), who highlight the role of cultural norms and social perceptions in shaping agricultural engagement. Socio-cultural attitudes toward irrigation farming can encourage more youth to participate, underscoring the significance of community support and cultural acceptance. In essence, an odd ratio of 8.388 indicates that young people who are moved by this specific socio-cultural factor are approximately 8.4 times more likely to participate in irrigation farming compared to those who are not affected by these factors.

The variable Disease outbreak reduces yields with a coefficient of 0.032, suggesting that the presence of disease outbreaks significantly hampers youth participation in irrigation farming. Low odd ratio of 0.032 for disease outbreak reveals a critical factor that irreversibly affects youth participation in irrigation farming. In this context, an odd ratio less than 1 suggests that the presence of disease outbreak significantly reduces the likelihood of young individuals engaging in irrigation farming. This is in line with Othman (2023), who reported that pests and diseases affect bumper harvest in Nigeria. Policymakers should consider strategies to mitigate disease risks and provide youth participants with information and resources to manage and prevent frequent outbreaks effectively.

Irrigation farming experience carries a significant odds ratio of 1.276 which suggests that irrigation farming plays a crucial role in involving youth participation. An odds ratio greater than 1 implies a positive relationship, meaning that as the years of experience in irrigation farming increases, the likelihood of young individuals participating in this sector also increases. This result is of substantial importance as it underlines the value of practical knowledge and hands-on experience in agriculture. It indicates that the more familiar and skilled young individuals become in irrigation techniques, the more inclined they are to participate in this form of farming. In the context of irrigation farming, experience can significantly contribute to better water management, improved crop yield and more efficient resource utilization.

The regression analysis reveals several variables such as lack of interest in irrigation farming, insufficient water for irrigation, high cost of labour, inability to access credit, high cost of operation and maintenance, drudgery/time consuming and unavailability/high fuel cost and total cost do not display statistical significance in affecting youth participation. The odd ratios near 1 for these variables suggests that they have little effects on the choice of engagement type by young individuals.

The pseudo R-square value of 0.4338 indicates that the mode explains about 43.4% of the variation in youth participation in irrigation farming. This pseudo (R^2) value concur with Ibidapo et al (2017), whose value was 0.482 in context of determinants of youth participation in dry season vegetables cultivation in urban areas of Ondo State, Nigeria. The pseudo R-square of 0.434 indicates that the factors considered, includes poor knowledge of irrigation, socio-cultural factors, disease outbreaks and experience, collectively have a substantial impact on youth participation.

Table 7: Challenges Facing Youth Participation in Irrigation Farming in Adamawa State

Challenges	Frequency	Percentage	Rank Order
Inadequate access to financial services	382	100%	1st
High Cost of inputs	382	100%	1st
Problem of pest and diseases	382	100%	1st
Poor response to farmers' need by the Government	382	100%	1st
Inadequate access to knowledge, information and education	378	98.9%	5th
Inadequate access to land	360	94.24%	6th
Difficulties in accessing market	254	66.4%	7th

Source: Field Survey, 2023.

Challenges Facing Youth Participation in Irrigation Farming

Recognizing that the engagement of youth in agriculture is a pivotal component of ensuring food security, poverty reduction, and rural economic growth, it is imperative to identify and comprehend the barriers that deter their active involvement. The major challenge faced by the youth is inadequate access to financial services. As the result shows in Table 7, 100% of the respondents do not have access to financial services. This challenge resonates with findings from previous research that underscores the importance of financial accessibility in promoting youth engagement in agriculture (Dauda et al., 2009). Limited access to credit and financial resources can hinder youths from investing in irrigation farming activities, including purchasing inputs, equipment, and technology. Addressing this challenge requires innovative approaches, such as tailored financial products and credit facilities targeted at youth farmers, to ensure that financial barriers do not impede their participation. Additionally, partnerships with microfinance institutions and banks can facilitate financial inclusion and enable youth to access the necessary capital for farming endeavours.

High cost of inputs also stands as a significant challenge. The result in Table 7 suggests that 100% of the respondents reported high cost of inputs as one of their major challenges. This challenge accentuates the importance of affordability of inputs, such as seeds, fertilizers, and pesticides, for successful irrigation farming (Dolma, 2020). High input costs can discourage youths from participating in farming, particularly when they lack the financial resources to procure necessary materials. To address this challenge, policy interventions could explore avenues for providing subsidies, access to affordable inputs, or alternative input-saving technologies. Engaging in partnerships with agricultural input suppliers and exploring bulk procurement options could help reduce input costs for youth farmers.

The problem of pests and diseases emerges as a significant barrier, affecting 100% of respondents, as depicted

in Table 7 pest and disease outbreaks can lead to yield losses, affecting both income and food security. Integrated pest management strategies, training programs, and the dissemination of knowledge about disease-resistant crop varieties could alleviate this challenge and empower youths to overcome production barriers (Ajadi et al., 2019). Collaborating with agricultural research institutions and extension services to provide guidance on pest and disease management could enhance the capacity of youth farmers to tackle this challenge effectively.

The difficulties in accessing market was considered least from the challenges faced by the respondents. The result in Table 7, indicates that 66.40% of respondents face difficulties in accessing markets. This challenge highlights the significance of establishing market linkages and enhancing market access for youths engaged in irrigation farming (Geza et al., 2021). Inadequate market access can hinder the ability of youth farmers to sell their produce and generate income. Interventions aimed at improving market infrastructure, providing market information, and promoting value-added activities can alleviate this challenge and incentivize youth participation in irrigation farming.

SUMMARY AND RECOMMENDATIONS

Summary

This study was undertaken in Adamawa State, to analyse youth participation in irrigation farming in the State. A sample size of 382 was selected from the four agricultural zones using purposive and simple random sampling techniques. The specific objectives were to describe the socioeconomic characteristics of the youth participants in irrigation farming; to determine the factors affecting youth participants in irrigation farming and identify the challenges of youth participant in irrigation farming in Adamawa State. The findings of the study revealed that over 56% of the respondents were between the age of 27 and 29 with over 60% of youth attaining formal education and more than 78% being married. The poor knowledge of irrigation, socio-cultural factors, disease outbreak and experience were significant at 1% level of significance and were found to be the major factors affecting the participation of youth in irrigation farming. Similarly, inadequate access to financial services especially credit, high cost of inputs, were the major challenges faced by Youth participation in irrigation farming while difficulties in accessing market was the least in the study area.

Recommendations

i. Youth irrigation farmers should be linked with financial institutions and other organizations such as non-governmental organizations, which can facilitate the access to credit and other financial services.
ii. Engaging in partnership with agricultural input suppliers, for example, high cost of input can be mitigated through organising cooperative society in order to meet their demand.
iii. Integrated pests and diseases management strategies. Example the practice of rotating crops can disrupt pest and diseases cycles by reducing the build-up of pathogens and pests that target specific crops.

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