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Dry Season Farming among Youths: A Panacea to Food Insecurity in North Central, Nigeria

Rasheed Mba[1] and Solomon Akighirga Ugosor[2]

[1]Department of Agricultural Economics and Extension, Federal University Wukari, Taraba State, Nigeria.
[2]Department of Science and Environmental Education, University of Abuja, Nigeria.
Corresponding author Email: rashmba17@gmail.com; Tel: +2348069277982

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ABSTRACT: This study examined dry season farming as a panacea to insecurity challenges in North Central, Nigeria. The specific objectives were to examine the relationship between dry season farming on food availability; accessibility; utilization; and stability; identify challenges affecting dry season farming; and provide dry season farming strategies required by youths. The population for this study was 90 comprising 30 lecturers from three Universities, 30 dry season farmers and 30 Agricultural extension agents in North Central, Nigeria. The entire population of 90 subjects was used for the study as a sample size. Data was collected using a questionnaire and interview. Data collected was analyzed using mean, standard deviation, Pearson Product Moment Correlation Coefficient (PPMCC) and analysis of variance (ANOVA). The findings of the study revealed a perfect positive correlation between dry season farming and food availability with an r-value of 0.998. The study found a perfect positive correlation between dry season farming and food accessibility with an r-value of 0.786. Also, the study found a perfect positive correlation between dry season farming and food utilization with an r-value of 0.412. There was a perfect positive correlation between dry season farming and food stability with an r-value of 0.979. Results of findings of the study revealed challenges of dry season farming with a significant value of 0.000 ($p=.000 < 0.05$). Finally, the findings revealed strategies for effective dry season with a significant value of 0.000 ($p=0.000 < 0.05$). The study concluded that youths could adopt agricultural strategies that would enhance dry season farming for enhanced food security. It was recommended that youths in North Central, Nigeria should engage in dry season farming to ensure food availability; accessibility, utilization and stability. Adequate irrigation systems, funds and other inputs should be made available to youths to enable them to participate fully in dry season farming.

Keywords: Dry season farming, panacea, security challenges, North Central and food security

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INTRODUCTION

Farming has been recognized as an important activity in human life. Before the discovery of crude oil, farming was the mainstream of Nigeria's economy. Farming is also crucial to economic growth, poverty reduction and provision of employment for jobless youths. There are two distinct seasons of farming in Nigeria. These are rainy and dry season farming. Dry season farming is the practice of planting and cultivating crops during dry season in Nigeria, usually between October and March. As a result of the lack of rainfall during dry season, farmers depend heavily on the use of irrigation to supply water to their farms. Ben-Enukora, Ejem, Aremu, Adeyeye and Oloruntoba (2020) assert that in 2014, the government of the federal launched Anchor Borrowers' Programme; the Agricultural Transformation Agenda to re-engage key stakeholders in crop production through the Central Bank of Nigeria's (CBN) assistance with N20 billion-naira support for dry season irrigation farming to ensure the availability of food all year round. This was a significant factor in the actualization of the sustainable

Development Goals which included: 1 (Zero poverty); 2 (Zero Hunger); and 3 good health and well-being (Ben-Enukora et al., 2020).

Dry season farming involves land preparation close to a water source which is carried out between late September and October with subsequent planting operations that start in late October and run until late March. In the context of this study, dry season farming is a type of farming system that is carried out during dry season for the benefits of providing self-employment opportunities, maintenance of security of life and property, and food security. According to Farmsquare (2022), the practice of dry season farming reduces the risk of crop loss, lowers the cost of production, improves soil health, and reduces pest and disease pressure. Farmsquare (2022) also opined that the dry season provides farmers with enough time to engage in other activities such as livestock rearing, beekeeping and other income-generating activities. The introduction of dry season farming in Nigeria is a development that results in employment (Nwite, 2018).

Adebe (2022) asserted that dry season farming improves food availability. A larger percentage of foods produced in the country such as maize, cassava, potatoes, groundnut, yam, plantain and more are planted during the rainy season. During this period there is an abundance of these farm produce in the market and are cheaper. When the dry season draws closer, they become a scarce commodity and are more expensive. However, with dry season farming, farmers can make these foods available at affordable rates. Yakubu, Nwolisa, Kehinde, Muhammad, Shuaibu and Usman (2019) reported that dry season farming improves the standard of living, serves as a source of income and could solve the problem food insecurity.

Food insecurity is a condition in which the members of households' lack access to adequate and sufficient food due to limited food products and other resources (Gundersen and Zilliak, 2015). Food is secured when it is available at all times, both physical and economic access to sufficient food to meet dietary needs for a productive and healthy life (United Nations Agency for International Development, 2024). A family is food secure when its members do not live in hunger or fear of hunger. Food security refers to the state of having reliable access to a sufficient quantity of affordable, nutritious food. There are four food security indicators: availability; access; utilization; and stability (Manikas, Ali and Sundarami, 2023). Availability is the household food production and crop diversity. Accessibility is the percentage food expenditure to total household expenditures while utilization is the degree of access to services (water, health and sanitation) and stability is stability of food prices and supply. According to United Nations Conference on Trade Development (2016)/ food utilization encompasses a number of non-food factors such as cultural practices in food preparation, feeding practices as well as intrahousehold allocation of food. Anderson (2018) explained that the availability of sufficient quantities of food of appropriate quality, supplied through domestic production or imports including food aid and post-disaster food interventions, is clearly a fundamental consideration in evaluating food security. In view of Vhurumuku (2013), food consumption rate, household diversity rate, adequate nourishment and low spending on food shows food accessibility. A country that ensures food is available to all its citizens is a strong and stable one. However, if there is too much food insecurity in a nation, such a nation becomes vulnerable and overly dependent on other countries for aid. The assurance of food security could be solved by dry season farming.

North Central region of Nigeria has a vast fertile land and adequate source of water that could be used for the production of food crops such as rice, maize, tomatoes, watermelon, garden egg, pumpkin, cucumber, carrots, peppers, sweet potatoes, onions, okra, spinach, eggplant, melon, and cotton during dry season. The prices of fresh agricultural products from dry season farming are usually higher than wet season crops. Dry season farming in North Central, Nigeria represents a promising avenue for farmers to elevate their livelihoods.

An observation by the researcher shows that despite the conducive environmental factors favourable for crop production and available sources of water for irrigation of crops during dry season in North Central, many youths do not engage in irrigation farming. A larger percentage of food crops produced in the region such as such as maize, cassava, potatoes, groundnut, yam, tomatoes, pepper, onions, cowpea, sugar cane and other vegetables are planted during the rainy season, during this period, there is an abundance of these farm produce in the market and are cheaper. These crops are usually consumed before the subsequent rain-cropping season causing food scarcity.

Despite the importance attached to dry season farming, Babangida (2024) reported that dry season farming for over a decade has mostly faced the challenges of insufficient water, lack of support from the government and ever-rising prices of pesticides, fertilizer and seeds. Banditry, the high cost of pesticides and lack of water for irrigation are the major challenges dry season farmers face in Nigeria including North Central, Nigeria.

During an interaction and interview with most of the youths in North Central, Nigeria, it was revealed that they are not well informed about the advantages of dry season farming over normal rainy season farming. Most of the youths confessed that they do not have adequate knowledge about the strategies and the financial capability to venture into dry season farming.

As a result, they are always idle during dry season and dry season. Lack of agricultural strategies and lack of funds to embark on dry season farming have made youths to choose alternative means of survival. Most of them have indulged in social vices such as political thuggery, ritual killings, cattle rustling, militancy, armed robbery, banditry and kidnapping for ransom causing unprecedented security challenges in the region (Many farmers in this region have fled away from their villages to IDP camps for safety, leaving their farm tools and houses destroyed, and farmlands uncultivated. The resultant effect of this menace is low food production in the region. It is against this background that the study is designed to examine dry season farming as a panacea to food security in North Central, Nigeria.

Objectives

The specific objectives of this study were to:

1. examine the relationship between dry season farming on food availability;
2. determine the relationship between dry season farming accessibility;
3. ascertain the relationship between dry season farming utilization;
4. find out the relationship between dry season farming stability;
5. identify challenges affecting youths' participation in dry season farming; and
6. identify dry season farming techniques required by youths in North Central, Nigeria.

METHODOLOGY

The study was conducted in North Central, Nigeria. The North Central Nigeria is a geographically spanned region from the west, around the confluence of the River Niger and the River Benue. It is a region stretching across central Nigeria longitudinally and forming a transition zone between Northern and Southern Nigeria. The region acquired the territory of the British Northern Cameroun which voted to become a province within Northern Nigeria (Higazi, 2011). The North Central Nigeria consists of the six states: Benue, Kogi, Kwara, Nasarawa, Niger, Plateau and the Federal Capital Territory (FCT) Abuja.

The study used correlational research design. This is because it investigates relationships between variables without the researcher controlling or manipulating any of them. The population for this study was 90 comprising 10 lecturers from three Universities, 30 dry season farmers and 30 Agricultural extension agents in North Central, Nigeria. The entire population of 90 subjects was used for the study as a sample size because the population size could be handled effectively by the researcher. Data was collected using a questionnaire and interview. The data collected was analyzed using mean, standard deviation, Pearson Product Moment Correlation Coefficient (PPMC) and analysis of variance (ANOVA).

RESULTS

Result in (Figure 1) shows descriptive statistics on the relationship between dry season farming and food availability. Dry season farming had a mean value of 3.4305 while the mean value for food availability was 3.4915 the standard deviation of dry season farming was 0.57997 and the standard deviation of food availability was 0.52961 respectively.

Result in (Figure 2) shows descriptive statistics on the relationship between dry season farming and food Accessibility. Dry season farming had a mean value of 3.4306 while the mean value for food accessibility was 2.200 the standard deviation of dry season farming is 0.57667 and the standard deviation of food availability is 0.77821 respectively. Result in (Figure 3) shows descriptive statistics on the relationship between dry season farming and utilization. Dry season had a mean value of 3.4305 while food utilization had a mean value of 3.3378. The standard deviation for dry season farming is 0.57667 while the standard deviation for food utilization was 0.52927 respectively. Result in (Figure 4) shows descriptive statistics on dry season farming and food stability. Dry season had a mean value of 3.4306 while food stability had a mean value of 3.4263. The standard deviation for dry season farming is 0.57667 while the standard deviation for food utilization was 0.37306 respectively. Results in (Table 1) show descriptive statistics on the challenges of dry season farming. All 9 items had mean values ranging from 2.7888 to 3.5333 while the standard deviation ranged from 0.54464 to 1.33408 respectively. This means that all the 9 items are challenges of dry season farming in North Central Nigeria.

Results in (Table 2) show descriptive statistics on the strategies of dry season farming. All 9 items had mean values ranging from 3.2778 to 3.6667 while the standard deviation ranged from 0.71893 to 1.06681 respectively. This means that all the 9 items are strategies of dry season farming in North Central Nigeria. The result in (Table 3) shows an *r* value of .998 and a 2-tailed significance of .000 at an alpha value of 0.05. This means that there is a perfect positive correlation between dry season farming and food availability. The result in (Table 4) shows an *r* value of .786 and a 2-tailed significance of .000 at an alpha value of 0.05. This indicates that there is a perfect positive correlation between dry-season farming and food accessibility.

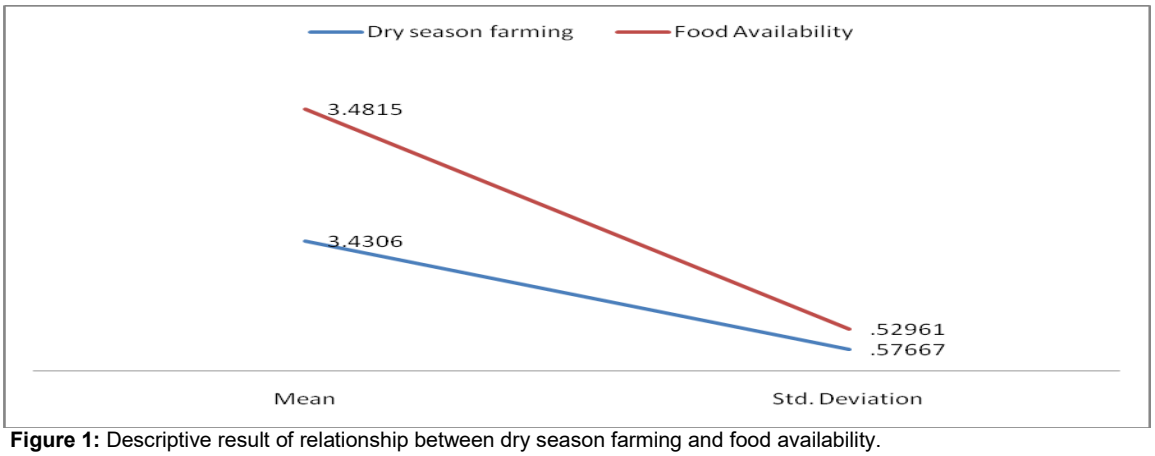

Figure 1: Descriptive result of relationship between dry season farming and food availability.

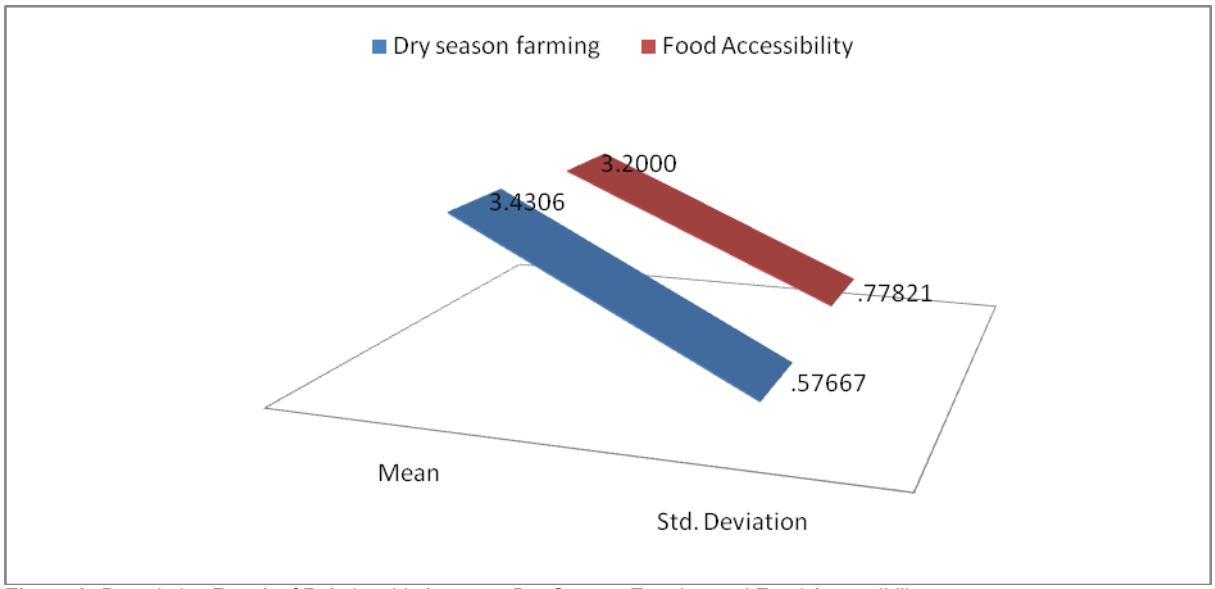

Figure 2: Descriptive Result of Relationship between Dry Season Farming and Food Accessibility
Source: Field Survey, 2024

The result in (Table 5) shows an *r* value of .412 and a 2-tailed significance of .000 at an alpha value of 0.05. The result implies that there is a perfect positive correlation between dry season farming and food utilization. The result in (Table 6) shows an *r* value of .979 and a 2-tailed significance of .000 at an alpha value of 0.05. The result implies that there is a perfect positive correlation between dry season farming and food stability. Table 7 shows ANOVA results with a significant value of .000 which is greater than the alpha value of 0.05. The result is statistically not significant. This means that significant challenges affect youths' participation in dry season farming in North Central, Nigeria. Table 8 shows ANOVA results with a significant value of .000 which is less than the alpha value of 0.05. The result is statistically not significant. This result implies that significant strategies could be employed by youths to enhance dry season farming in North Central, Nigeria.

DISCUSSION

The results of findings of the study also revealed a significant relationship between dry season farming and food availability. This finding collaborates with the report of Adebe (2022) asserted that dry season farming improves food availability. The finding also affirms a study by Farmsquare (2022) which reported that the dry season provides farmers with more time to engage in other activities such as livestock rearing, beekeeping and other income-generating activities thereby making these food products available all year round.

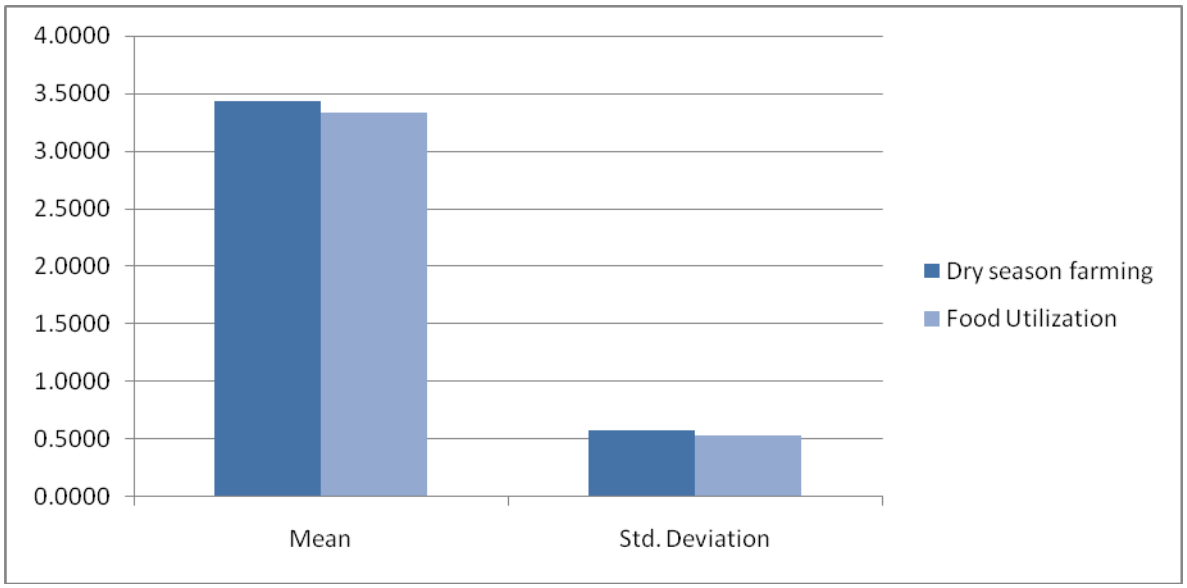

Figure 3: Descriptive Result of Relationship between Dry Season Farming and Food Utilization
Source: Field Survey, 2024

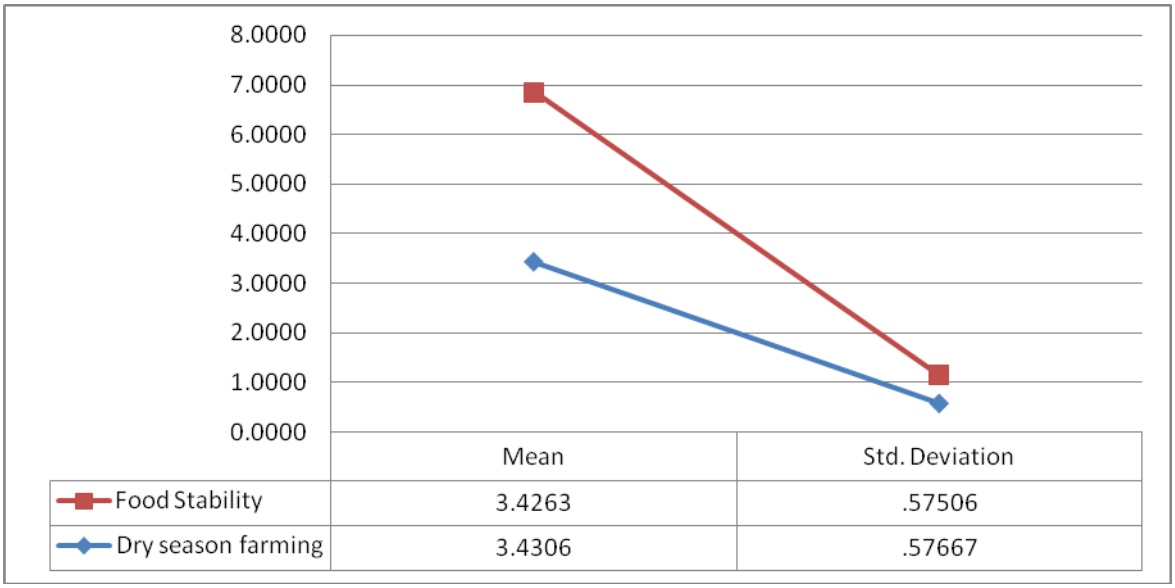

Figure 4: Descriptive Result of Relationship between Dry Season Farming and Food Stability
Source: Field Survey, 2024

Table 1: Mean and Standard Deviation of Respondents on the Challenges of Dry Season Farming in North Central Nigeria.

S/N	Item Statement	Mean	Std. Deviation
1	Inadequate inputs	3.0556	1.25744
2	High cost of equipment and insufficient financing	2.7889	1.25863
3	Pest and disease problem	3.0556	1.26634
4	High cost of hired labour	2.8667	1.33408
5	Uses polluted water that spreads diseases	3.0000	1.04934
6	Pilfering of materials	3.1667	1.03044
7	Lack of transportation facilities	3.3556	.97510
8	Marketing problem	3.3556	.95177
9	Issues of insecurity	3.5333	.54464
	Grand Mean	3.1309	1.07420

Source: Field Survey, 2024

Table 2: Mean and Standard Deviation of Respondents on the Strategies to Enhance Dry Season Farming.

Item Statement	Mean	Std. Deviation
Choose drought-resistant varieties of crops	3.5111	0.95098
Adequately prepare land by clearing, flattening and grading the surface	3.3111	1.06681
Add nutrients/manure/fertilizer after tilling the soil	3.4889	0.86433
Plant warm-temperature crops that thrive even during dry seasons	2.8778	0.99242
Use mulch materials to retain moisture in the soil	3.2778	0.92442
Employ irrigation systems like pipelines, dams or water reservoirs, sprinklers, canals, sprays, pumps, and other man-made elements to water crops	3.4222	0.73405
Follow the basic planting period, especially in the morning or late in the evening	3.4889	0.85123
Follow proper plant spacing and distance in order to avoid crop competition	3.5111	0.87723
Supply water or irrigate daily or as needed	3.6667	0.71893
Grand Mean	3.3951	0.88671

Source: Field Survey, 2024

Table 3: Correlation between dry season farming and food availability.

		Dry season farming	Food Availability
Dry season farming	Pearson Correlation	1	0.998**
	Sig. (2-tailed)		0.000
	N	90	90
Food Availability	Pearson Correlation	0.998**	1
	Sig. (2-tailed)	0.000	
	N	90	90

**. Correlation is significant at the 0.01 level (2-tailed).
Source: Field Survey, 2024

Table 4: Correlation between dry season farming and food accessibility

		Dry season farming	Food Accessibility
Dry season farming	Pearson Correlation	1	0.786**
	Sig. (2-tailed)		0.000
	N	90	90
Food Accessibility	Pearson Correlation	0.786**	1
	Sig. (2-tailed)	0.000	
	N	90	90

**Correlation is significant at the 0.01 level (2-tailed).
Source: Field Survey, 2024

Table 5: Correlation between dry season farming and food utilization.

		Dry season farming	Food Utilization
Dry season farming	Pearson Correlation	1	0.412**
	Sig. (2-tailed)		0.000
	N	90	90
Food Utilization	Pearson Correlation	0.412**	1
	Sig. (2-tailed)	0.000	
	N	90	90

**Correlation is significant at the 0.01 level (2-tailed).
Source: Field Survey, 2024

Table 6: Correlation between dry season farming and food stability.

		Dry season farming	Food Stability
Dry season farming	Pearson Correlation	1	0.979**
	Sig. (2-tailed)		0.000
	N	90	90
Food Stability	Pearson Correlation	0.979**	1
	Sig. (2-tailed)	0.000	
	N	90	90

**Correlation is significant at the 0.01 level (2-tailed).
Source: Field Survey, 2024

Table 7: ANOVA result on the challenges of dry season farming on food security.

	Sum of Squares	Df	Mean Square	F	Sig.
Between Groups	36.801	2	18.401	121.296	.000
Within Groups	13.198	87	.152		
Total	**49.999**	**89**			

Source: Field Survey, 2024

Table 8: ANOVA Result on the Strategies for Enhancing Dry Season Farming.

	Sum of Squares	Df	Mean Square	F	Sig.
Between Groups	13.897	2	6.949	35.154	.000
Within Groups	17.197	87	.198		
Total	**31.094**	**89**			

Source: Field Survey, 2024

The result of the findings revealed a significant relationship between dry season farming and food accessibility in North Central, Nigeria. The finding is similar to that of Nwaubani (2023) who noted that to be able to stay food secure, dry-season farming must be considered and taken more seriously. The finding also agrees with Farmsquare (2022) who noted that dry season farming reduced the risk of crop loss, lowered the cost of production, improved soil health, and reduced pest and disease pressure. Results of the findings also revealed a significant relationship between dry season farming and food utilization. The finding collaborates with that of Farmsquare (2022) who found out that **dry-season** farming reduces the risk of crop loss and **l**owers the cost of production thereby making them available for utilization.

Findings of the study revealed significant challenges militating against the participation of youths in dry season farming in North Central, Nigeria. The finding is not different from a report by Nwite (2018) who reported that the growing embrace of dry season farming in Nigeria has not come without its challenges. For farmers who cultivate perishable crops like tomatoes, watermelon and other fruits, the loss of a huge amount of the produce can be discouraging. For instance, tomato farmers in northern Nigeria reported losses of over 40 percent of their yield due to poor storage and processing facilities. The finding also affirms that of Babangida (2024) who revealed that dry season farming for over a decade during has mostly faced the same challenges such as insufficient water, lack of support from the government and ever-rising prices of pesticides, fertilizer and seeds. Banditry, high cost of pesticides, and lack of water for irrigation are the major challenges dry season farmers face. Results of the findings revealed significant strategies that could be employed by youths to enhance dry season farming in North Central, Nigeria. The finding affirms Nwaubani (2023) who reported that choosing drought-tolerant crops, mulching: that helps to conserve soil moisture and reduce evaporation, addition of organic matter, such as compost or manure can help improve the soil and using irrigation efficiently to enhance water-saving methods should be adopted during irrigation.

Conclusion

Dry season farming has been recognized as a good farming practice in Nigeria. This study has found that dry season farming has a significant impact on food security. However, there are challenges affecting the effective participation of youths in dry season farming. The study concludes that youths could adopt agricultural strategies that would enhance dry season farming in North Central, Nigeria.

Recommendations

Based on the findings of this study, the following recommendations are made:

1. The youths in North Central, Nigeria should engage in dry season farming to ensure food availability; accessibility, utilization and stability.
2. Adequate irrigation systems, funds and other inputs should be made available to youths to enable them to participate fully in dry season farming in North Central, Nigeria
3. Security operatives should be made available to tackle banditry, kidnapping and herdsmen-farmers conflict militating against youths' participation in dry season farming
4. The Federal government should establish vocational centers in all states of North Central, Nigeria where youths will be trained on dry farming techniques.

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