



**IMPACT OF WOMEN IN AGRICULTURE (WIA) TRAINING ON WELFARE STATUS
OF RURAL HOUSEHOLDS IN OYO STATE, NIGERIA**

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ABSTRACT

The study examined the impact of Women-in-Agriculture (WIA) training on welfare status of rural households' welfare in Oyo State, Nigeria. A multistage sampling procedure was used in selecting 360 respondents disaggregated into 180 trained and 180 untrained women under the Agricultural Development Programme. Well-structured questionnaire was used to collect data. Descriptive Statistics (DS), Endogenous Switching Regression (ESR) and Likert Rating Scale (LRS) were used in analysis. The socioeconomic results for participants and non-participants in WIA training were age (58years and 25years), household size (8 members and 5 members) and income (₦54,345.00 and ₦35,040.00) respectively and training on soya milk and cheese (98.6%) production was scored first among others. Log-likelihood (-542.772; $p < 0.01$) and Wald chi2 (109.64; $p < 0.01$) revealed the appropriateness of ESR model. Participation in WIA training was positively influenced by education (0.0392; $p < 0.05$), household size (0.2278; $p < 0.05$) and extension contact (0.7347; $p < 0.01$) while education (0.0193; $p < 0.05$), number of seasonal training (0.2245; $p < 0.01$) and monthly income (0.1250; $p < 0.01$) increased household's welfare. Improvement in income of the respondents was scored highest (4.19) among the benefits highlighted. It is suggested that more trainings that are related to boosting the productive efforts of rural women be organized by the stakeholders in agriculture.

Keywords: Agriculture, Households, Status, Rural and Women

INTRODUCTION

Improving of attitude, knowledge and skills through taking trainings to the residences of rural women whose occupation is agriculture related, whether serving as active actor in the production, processing, distribution or marketing stage for better productivity cannot be overemphasized (Tijani and Ayinla, 2015). Training plays a crucial role in educating, up skilling, and motivating farm women to apply scientific practices in their farming (Eforuoku, 2016). Empowering rural women has been found to significantly impact the livelihood of households, communities and the nation at large (Ogato, 2013). Enhancing farming skills and promoting knowledge-based decision-making are vital aspects of training farmers (Eforuoku, 2016). Agricultural projects and programs incorporate training components to empower participant farmers with knowledge, skills, and technologies. Notably, women farmers carry out the majority of agricultural work, and empowering them can have far-reaching effects on agricultural development (Food and Agriculture Organization, 2011).

The establishment of Agricultural Development Programs in Nigeria marked a significant milestone in the country's agricultural history. For the first time, these programs focused on women farmers as an important component of agricultural development (Miftahu and Habiba, 2023). While the primary objective of the Agricultural Development Program was to increase farm productivity and improve the living standards of farm families, it was essential to address the specific needs of women farmers, especially concerning gender-specific issues. The emphasis was



placed on 70% production and 30% post-harvest technologies to fully utilize the agricultural capabilities of farm women and improve their lives, families, communities, and the nation as a whole (Miftahu and Habiba, 2023).

Women farmers typically engage in multiple livelihood options, including farming, animal husbandry, marketing, household chores, and involvement in social issues. However, the underperformance of agriculture in many countries can be attributed to constraints and the undervalued role of women, who are crucial resources in farming (Doss, 2011). Millions of women work as farmers, farm workers, and natural resource managers, contributing to national agricultural output, environmental maintenance, and family food security (Onyemobi, 2000; Brown *et al.*, 2001). Rural women make significant contributions to the agricultural and rural economies of developing countries, accounting for approximately half of the world's food production. In most developing countries, they produce between 60 to 80 percent of the food (FAO, 2011). The roles of rural women vary across regions and are rapidly changing due to economic impacts and social forces transforming the agricultural sector (Miftahu and Habiba, 2023). Managing complex households and pursuing multiple livelihood strategies, rural women engage in diverse activities such as crop production, animal care, food processing, wage labor in agricultural or rural enterprises, fuel and water collection, trade and marketing, care-giving, and home maintenance. Although these activities may not be considered "economically active employment" in national accounts, they are indispensable for the well-being of rural households (Bhavana and Amrith, 2023).

In recent years, the involvement of women in agriculture has garnered increased attention in Nigeria. Developing a gender-specific extension service tailored to women farmers is crucial, considering their significant roles in agricultural production, processing, and utilization in the country (Nnadozie and Ibe, 2000). This paper aims to examine the impact of Woman in Agriculture (WIA) training on the welfare status of rural households in Oyo State, Nigeria. Oyo State, located in southwestern Nigeria, is predominantly rural and heavily dependent on agricultural activities for livelihoods. Understanding the effects of WIA training on the welfare status of rural households is essential for informing policies and interventions that promote gender equality, poverty reduction, and sustainable agricultural development. The specific objectives are to describe the socioeconomic characteristics of the respondents; identify some available WIA trainings organized for rural households; determine the impact of participation in WIA training on the welfare of the rural women and examine the perceived benefits derived from WIA training acquired by the rural women.

Hypothesis for the Study

H₀: There is no significant relationship between the monthly income of WIA training participants and non-participants.

MATERIALS AND METHODS

The Study Area

The study was carried out in Oyo State, Southwest, Nigeria. The State is bounded in the North by Kwara State, in the West by Benin Republic, in the East by Osun State and in the South by Ogun State. It is located on latitude 8° 00'N and longitude 4° 00'E. The State has a total population of about 6million people (National Population Commission, 2006). The total land area of Oyo State is 28,249km² comprising forest, farmland and water body. The rainfall pattern is remarkably constant ranging between 1,211mm at Kishi in the far North and 1,264mm at Ibadan

in the South. The average annual rainfall is estimated at between 1,194mm in the North and 1,278mm in the South (NiMET 2019). The mean temperature is 27⁰C while sunshine hours per day in the State capital range from 2.4 hours in August to 7 hours in February. The prevailing weather condition and edaphic nature of the soil favour cultivation of some notable crops such as maize, cassava, yam, cashew, shear butter and watermelon among others.

Sampling Technique

A multistage sampling procedure was used in the selection of the respondents used for the study. The first stage involved the random selection of Oke-Ogun and Ogbomoso zones from the existing four Agricultural Zones in the State. In the second stage was the random selection of two blocks (means LGAs in APD operation) from each of the Agricultural Zones earlier selected giving a total of four blocks. In the third stage, three cells were randomly selected from each of the four blocks forming 12 communities. Random selection of 30 respondents from each of the communities comprising 15 trained women farmers through WIA programme and 15 women who were without WIA training. A total of 180 trained women and 180 untrained women formed a total of 360 respondents sampled and used in the study.

Analytical Techniques

Descriptive statistics was used in analyzing and describing the socioeconomic characteristics and identifying different trainings undergone by the respondents. Descriptive statistics consist frequency counts, percentages and mean among others.

Endogenous Switching Regression was employed in determining participation or otherwise of rural women in WIA training. To achieve this, probit regression was first used to determine the factors that affect welfare status of the rural women sampled while switching regression model was used to correct for sample selection bias which may arise from other interventions that provided multiple status to rural women in addition to welfare (Lee, 1978; Madalla, 1983). In using Switching regression model, separate regression equations are used to model the welfare groups of rural women condition on a specified criterion function.

The condition of the respondents is described by an unobservable welfare function of a vector of exogenous household socioeconomic and welfare status variables. The relationship between rural women status and the vector of explanatory variable is specified in equation (1) as:

$$I^* = \delta Z_i + \mu_i \quad \dots(1)$$

Where Z is a vector of exogenous variable δ is a vector of parameters and μ_i is a random disturbance term that is distributed with zero mean and constant variance δ^2 .

I , which is the indicator of welfare status not observed, but responses from survey is used to determine those undergraduate students whose expenditure (proxy for welfare), that is,

$$I^* > 0$$

These responses are used to define the criterion function which is observable dichotomous variable I_i where;

$$I = 1 \text{ if } I^* = \delta Z_i + \mu_i \geq 0 \quad \dots(2)$$

$$I = 0 \text{ otherwise}$$

The dependent variable in the first stage probit equation is the participation of women condition WIA training as organized by the Agricultural Development Programme. The variable takes a value of 1 if a woman receives WIA training and 0 if otherwise. The explanatory variables are continuous and binary.

Probit maximum likelihood estimates is used to estimate the parameter δ in equation (2). It is assumed that $\text{var}(U_i) = 1$, since δ is estimable only up to a scale factor. Following from Federet

al (1990) and Freeman (1998), the welfare of the two groups of farmers is modelled by reduced form equation specified by:

$$Y_{1t} = \beta_1 X_{1t} + U_{1i} \text{ if } i = 1 \quad \dots(3)$$

and,

$$Y_{2t} = \beta_2 X_{2t} + U_{2i} \text{ if } i = 0 \quad \dots(4)$$

Where;

β_1 and β_2 are vector parameters

X_{1i} and X_{2i} are vectors of exogenous variables defined in 5.

U_{1i} and U_{2i} are random disturbance terms

Y_{1i} and Y_{2i} are the monthly expenditure function for undergraduate students with and without entrepreneurial training.

Ordinary least square (OLS) method is used to estimate the parameters β_s equation (3). The random disturbance terms U_{1i} , U_{2i} and U_i are assumed to have trivariate normal distribution with zero mean and non-singular covariance matrix. Maximizing the bivariate probit likelihood function is feasible but time consuming to a two-stage estimation method is used to estimate the systems of equations (1) and (2). The conditional expected values of the error terms U_1 and U_2 in equation (2).

Where ϕ and Φ are the probability density function and the cumulative distribution function respectively. The ratio $\frac{\phi}{\Phi}$ evaluated at $\delta^1 z_i$ for each 1 is the inverse mills ratio. For convenience, define

$$\lambda_{1i} = \phi(i\delta^1 z_i) / \phi(\delta^1 z_i) \text{ and} \quad \dots(5)$$

$$\lambda_{2i} = \phi(i\delta^2 z_i) / \phi(\delta^2 z_i)$$

These terms are included in the specification of equation 6 to yield

$$Y_{1t} = \beta_1 X_{1i} + \sigma_{1u} \lambda_{1i} + e_{1i} \text{ if } I = 1 \quad \dots(6)$$

$$Y_{2t} = \beta_1 X_{2i} + \sigma_{2u} \lambda_{2i} + e_{2i} \text{ if } I = 0 \quad \dots(7)$$

Where e_{1i} and e_{2i} , the new residuals have zero conditional means. These residuals are however heteroskedastic. Therefore, estimating equation (4) by weighed least square (WLS) rather than OLS would give efficient estimates. Thus the two stage estimation procedure that is used to estimate the model proceeds as follows: In the first stage, probit maximum likelihood is used to obtain estimate of δ from equation (1). By substituting the estimated values of δ for δ ; estimates are obtained for λ_{1i} and λ_{2i} from equation (3). In the second stage (equation 4) is estimated by WLS using the estimated value λ_{1i} and λ_{2i} as instrument for λ_{1i} and λ_{2i} respectively.

Likert Scale Rating

The five point Likert type scale was used to examine perceived benefits derived from WIA training by rural women in the study area. These are defined as: 5= Strongly Agreed 4= Agreed, 3 = Undecided, 2= Disagreed and 1= Strongly Disagreed. The scores were then calculated as follows:

$$\text{Weighed Score (WS)} = 5_n + 4_n + 3_n + 2_n + 1_n = \text{Total Score for each constraint} \quad \dots(8)$$

where n = Frequency of each constraint for each rating.

$$\text{Mean Score (MS)} = \frac{\text{Total Score of Each Constraint}}{\text{Total Number of Respondents}} \quad \dots(9)$$

Rank = Value of the MS was then used to rank the severity of the limitations faced by the respondents.

Test of Hypothesis

Pair sample T-test was used in the test of hypothesis stating that there is no significant relationship between the monthly income of WIA training participants and non-participants. The formula is as given below:

$$t = \frac{\sum d}{\sqrt{\frac{n(\sum d^2) - (\sum d)^2}{n-1}}} \quad \dots(10)$$

Where: d= Difference per paired value
n = Number of samples

RESULTS AND DISCUSSION

Socioeconomic characteristics of beneficiaries and non-beneficiaries of WIA training is presented in Table 1. Majority (52.8%) of the trainee falls within the age bracket (41-60years) and the mean age stood at 58years while non-WIA training recorded highest (40.0%) within the age range (21-40years) and the average age of 25years. The result suggests that a high number of trainees are relatively old while the non-trainees are very young. Acharya *et al.* (2010) affirmed that women's age is a strong determinant in making family decisions which tends to improve their status and self-worth.

Household size showed that beneficiaries of WIA training are 8members while their non-trainee members are 5members. It could be inferred from this result that households with more members had more opportunity to participate in the trainee. Farming is found to be highest (58.3%) among the beneficiaries of the training while trading (56.7%) is found to be highest among the non-training beneficiaries. The result indicates that farmers have more time in making themselves available for WIA training due to their consistent availability on the farm. On the contrary, traders are itinerary in their mode of operation and as a result may not be available for the training most times. Majority (60%) of the beneficiaries of WIA training are married while 59.4% of non-beneficiaries of the training are single. Most of the trainings of WIA take place in the rural where most of the old respondents reside while many of the single reside in the urban. Most (84.4%) of the WIA training beneficiaries are cooperative members while their counterparts (64.4%) were not. The results suggest that trainees were more unified and agree with one another than the non-beneficiaries of the training who might not have one voice or come together to agree on cogent issues. However, 40.0% of the beneficiaries of WIA training have no formal education while the peak of education for the non-beneficiaries is tertiary (53.9%). The result suggests that most women in the rural areas have low education. Fabiyi and Akande (2015) reported that women in most rural areas of Nigeria are less educated. Monthly income of the respondents with WIA training opportunity and those who are otherwise are in the respective of ₦54, 345.00 and ₦35, 040.00 respectively. The results suggest that the WIA training helps a long way in augmenting the income of the trainees through commercialization of their knowledge and products they derived from the training.

Table 1: Socioeconomic Characteristics of the WIA Training Participants and Non-Participants

Variable	WIA Training Beneficiary			Non-WIA Training Beneficiary		
	Frequency	Percent	Mean	Frequency	Percent	Mean
Age (years)						
≤20	11	6.1	58years	65	36.1	25years
21-40	20	11.1		72	40.0	
41-60	95	52.8		18	10.0	
>60	54	30.0		25	13.9	
Household Size (No.)						
≤6	31	17.2	8 members	118	65.6	5 members
7-10	115	63.9		54	30.0	
>10	34	18.9		8	4.4	
Primary Occupation						
Farming	105	58.3		12	6.7	
Artisan	27	15.0		31	17.2	
Trading	13	7.2		102	56.7	
Civil Service	35	19.4		35	19.4	
Marital Status						
Single	42	23.3		107	59.4	
Married	108	60.0		21	11.7	
Widowed	14	7.8		54	30.0	
Separated	16	8.9		32	17.8	
Cooperative Member.						
Yes	152	84.4		64	35.6	
No	28	15.6		116	64.4	
Educational Level						
NonFormal Education	72	40.0		9	5.00	
Primary	56	31.1		32	17.8	
Secondary	44	24.4		42	23.3	
Tertiary	8	4.4		97	53.9	
Monthly Income(₦)						
≤20,000	10	5.6	N54,345	78	43.3	N35,040
20,001-40,000	42	23.3		65	36.1	
40,001-60,000	23	12.8		25	13.9	
>60,000	105	58.3		12	6.7	
Total	180	100.0		180	100.0	

Source: Field Survey, 2023.

Some WIA Trainings Organized for Rural Households

Distribution of respondents based on the array of WIA trainings organized for rural households is presented in Table 3. Production of drinks for households' consumption (98.9%) was ranked first. This result suggests that rural households found it very expedient to learn production of some basic drinks to reduce food expenses and more importantly supply required nutrients in their diets. Adult literacy class (96.1%) was scored second on the preference list of the trainees. The reason for this may be attributed to their strong desire to be literate in order to cope with modern day transactions in their diverse businesses. Yam minisett production (91.7%) was scored third and primary concerns of the trainees. The result suggests that cultivation of yam using better variety coupled with skill acquisition in the application of modern technique for better yield. Home and personal hygiene (88.3%) was ranked fourth. Cleanliness of the home and personal items is a major concern for the respondents as it is believed that health is wealth. Processing and storage of produce (81.7%) was scored fifth among the highlighted training area by the respondents. This result suggests that processing of harvest which is equivalent to value addition helps to increase the shelf life harvested crops and enhance decision to sell them at a later date with better price. Production of household items (75.0%) such as basket, seat and hand fan were ranked sixth among the array of trainings offered and received by the rural households.

Table 3: Distribution of Some WIA Trainings Organized for Rural Households

Training Areas	Frequency	Percentage	Rank
Production of yam minisett	165	91.7	3 rd
Production drinks such as zobo, soymilk, ogi, soycheese e.t.c.	147	98.9	1 st
Processing and storage of produce	178	81.7	5 th
Production of household item such as basket, seat, fan e.t.c.	135	75.0	6 th
Home and personal hygiene	158	88.3	4 th
Adult literacy class	173	96.1	2 nd

Source: Field Survey, 2023.

Endogenous Switching Regression Estimate of WIA Training Effect on Rural Households' Welfare

Table 4 presents results of the effects of WIA training on rural households' welfare. The correlation coefficient ρ_1 and ρ_2 is 0.2150 ($p < 0.01$) and 0.0236 ($p < 0.01$) which are significantly different from zero in both cases, that is, cases of welfare and participation in WIA training. ρ_1 and ρ_2 being negatively and significantly different from zero, the model suggests that individuals increased household's welfare in that category than a random individual from the sample would have realized. The log likelihood (2655.40) and Wald χ^2 (79.20) are significant at 1% suggesting that the model is fit and appropriate. The variable σ , $\ln \sigma_1$, $\ln \sigma_2$, $\ln \rho_1$ and $\ln \rho_2$ are ancillary parameters used in the maximum likelihood procedure. σ_1 and σ_2 are the square root of the variances of the residuals of the regression part of the model, and insignificant is its log. $\ln \rho_1$ and $\ln \rho_2$ are the transformation of the correlation between the errors from the two equations. Table 3 shows direct relationship between education and welfare and found significant at 10%. An increase in the years of education leads on average to increase in welfare. Advancement in education helps individual woman to secure better job and it enhances opportunity to create more income spinning opportunities. Household size and welfare are inversely related and found to be significant at 5%. Monthly income and welfare are directly related and found significant at 1%. An increase in income leads on average to 0.2245 increase in

welfare of the respondents. The result suggests that with increase in income, the purchasing power of household increases hence an increase in welfare status. An increase in household size leads on average to 0.1250 decrease in welfare. It could be inferred from the result that small family have opportunity of high per capita income which increases the welfare of the household.

Participation of the respondents in WIA training was found to be significantly influenced by education, household size and extension contact. Education has a direct relationship with education and found significant at 5%. A unit increase in education leads on average to 0.0392unit increase in the probability of participating in WIA training. It could be inferred from this result that education plays a vital role in realizing the importance of training and its unquantifiable benefits. Household size has a direct relationship with participation in WIA training it is positively significant at 5%. A unit increase in household size leads on the average to 0.2278unit increase in the probability of participating in WIA training. This result suggests that respondents with more household members showed interest in participating in WIA training and the reason may be due to having hope in utilizing the skills acquired to generate more income for family welfare. Extension contact is directly related to participation in WIA training and found to be positively significant at 1%. A unit increase in the number of seasonal extension contacts leads on the average to 0.7348 unit probability of participating in WIA training. It could be inferred from this result that the encouragement and support from the extension agent assist respondents in readiness to undergo training.

Table 4: Endogenous Switching Regression of Estimate of WIA Training on Youth Welfare

Variable	Welfare=1		Welfare=0		Participation	
	Coeff.	Prob.	Coeff.	Prob.	Coeff.	Prob.
Constant	0.6495***	0.00	0.4910	0.16	2.0306***	0.00
Education	0.0193*	0.02	0.0547***	0.00	0.0392**	0.05
Monthly Income	0.2245***	0.00	0.0901*	0.09	0.0809	0.16
Primary Occupation	0.0206	0.83	0.1545	0.42	0.1809	0.40
Cooperative Membership	0.0348	0.70	0.3197*	0.07	0.0090	0.97
Household Size	-0.1250**	0.01	-0.1088	0.21	0.2278**	0.02
Extension Contact	0.2354	0.21	0.0132	0.92	0.7348***	0.00
Age	-0.0542	0.23	-0.2116**	0.02	0.0069	0.44
Marital Status	0.1728	0.10	0.3496	0.13	0.3698	0.12
LR test of Indep.	0.24					
Eq.(chi2(1)						
Log likelihood	0.2655.40					
Wald chi2(6)	79.20					
Prob.>chi2	0.000					
/Inst1	-		Sigma_1		0.5797	
	0.5453***					
/Inst2	-0.1291**		Sigma_2		1.1378	
/r1	-0.2184		Rho_1		0.2150	
/r2	0.0236		Rho_2		0.0236	

Source: Field Survey, 2022.

Perceived Benefits of WIA Training Among Rural Households

Distribution of perceived benefits of WIA training among rural household is presented in Table 5. Welfare and income improvement (4.19) was scored first by the beneficiaries of WIA training. Inference could be drawn from this result that skill acquired from the training helped the trainees to produce commodities and render services that bring income which lifted their purchasing power. This is in line with the findings of Ihugba *et al.* (2013) that improved standard of living through broader thinking process is part of the benefits associated with participation in skill acquisition and entrepreneurship development. Respondents indicated that skill improvement and capital formation (4.11) was scored second. Apart from the skills of the trainees that experienced a boost, proceeds from the trainings from sales of items produced and saved over time assisted in the possession of productive assets. Financial independence (4.10) was ranked third; the training received by the respondents enhanced their ability to make money from the commercialization knowledge, this helps the rural households to make more money that is high enough to surmount household's financial hurdle.

Reduction in household expenses on necessities (3.89) with fourth position. Involvement in the WIA-organized trainings goes a long way in reducing the pressing needs of the households in as much they can produce some of the items that are required at home front. Reduction in the household friction (3.78) was ranked fifth by the trainees in the study area. It was submitted that, since the rural household members were acquiring trainings coupled with implementation and realization of money to support the rural homes, disagreement had become a thing of the past. Last but one on the list of the benefits derived by the respondents from WIA training was job creation and security (3.65) which ranked sixth. Trainees of the project were able to create jobs through the skill acquired and savings to acquired productive assets. Also, the training helped them to secure their jobs as they are the employers who run the businesses based on the entrepreneurial principles. Ranked last was improvement of social relationship (3.59) which suggests that trainees who could be referred to as people of common interest and unified goals found it very easy to relate with one another to achieve a remarkable progress.

Table 5: Distribution of Perceived Benefits of WIA Training among Rural Households

Statements	SA	A	U	D	SD	Wt	Mean	Rank
Skill improvement and capital formation	45.0	31.4	15.4	5.8	1.9	1482	4.11	2 nd
Job creation and security	28.1	30.8	23.3	13.3	4.4	1313	3.65	6 th
Financial independence	49.4	26.4	12.5	8.3	3.3	1477	4.10	3 rd
Welfare and income improvement	51.4	27.5	12.2	6.7	2.2	1509	4.19	1 st
Improvement of social relationship	29.2	28.1	21.9	14.7	6.1	1204	3.59	7 th
Reduction in household expenses on necessities	36.1	33.3	17.2	10.3	3.1	1401	3.89	4 th
Reduction on household friction	34.4	29.4	20.0	11.7	4.4	1360	3.78	5 th

Source: Field Survey, 2022.

Test of Hypothesis

Test of hypothesis on the relationship between the incomes of the beneficiaries and non-beneficiaries of WIA training was tested using pair t-test and present in Table 6. The value (30.355; $p < 0.01$) being strongly significant led to the decision that the null hypothesis be rejected and

alternate hypothesis stating that, there is a significant relationship between the incomes of beneficiaries and non-beneficiaries of WIA training was accepted.

Table 6: Test of Hypothesis Relating Beneficiaries and non-Beneficiaries' Monthly Income

Variables Interaction	Paired (95% Confidence)	T	df	Sig.(2-tailed)
Beneficiaries and non-beneficiaries of WIA training.	20302.371	30.355	359	0.000

Source: Field Survey, 2022.

CONCLUSION AND RECOMMENDATIONS

Women-in-Agriculture training as primarily targeted at women, its involvement by the respondents was influenced by education, household size and extension contact. Also, it was perceived by the respondents as lifter of the household in the area of skills, income and general welfare of the households. It is recommended that:

- (i) Women should, as a matter of necessity, be granted the opportunity to acquire more education even if it is adult literacy class to be organized within their communities;
- (ii) Government should intensify efforts in the employment and even deployment of extension agents who will create awareness and also impact skills and knowledge in rural women in order to be at par with the current development nationally and globally.
- (iii) More training areas that enhances generation of income when commercialized in order to cope with the economic realities of the present days in the country.

REFERENCES

- Acharya, D.R., Bell, J.S., Simkhada, P., Teijlingen, E.R. and Regmi, P.R. (2010). Women's autonomy in household decision-making: A demographic study in Nepal. *Journal of Reproductive Health*, 7(15):23-29.
- Bhavana, S. and Amrith, R. (2023). Women in agriculture. Retrived from <https://www.researchgate.net/publication/370697456>
- Brown, L. R., Feldstein, H., Haadad, L., Pena, C. and Quisumbing, A. (2001). Woman as producers, gatekeepers and shock absorbers. In: Per Pinstup Anderson and Rajul Pandya – Lorch (editors); *The Unfinished Agenda – Perspectives on overcoming Hunger, Poverty and Environmental Degradation*. DFID Sustainable livelihoods guidance.
- Doss, C. (2011). The role of women in agriculture, agricultural development economic division, the food and agricultural division of the United Nations.
- Fabiyi, E. F. and Akande, K. E. (2015). Economic Empowerment for Rural Women in Nigeria: Poverty Alleviation through Agriculture, *Journal of Agricultural Science*, 7(9):236-241.
- Feder, G., Lau, L. J., Lin, J. Y. and Luo, X. (1990). The relationship between credit and productivity in Chinese agriculture: A microeconomic model of equilibrium. *American Journal of Agricultural Economics*, 72(5):1151-1157.
- Food and Agricultural Organisation (2011) The role of women in agriculture. ESA. Working Paper No. 11-02.
- Freeman, H. A., Ehui, S. K. and Jabbar, M. A. (1998). Credit constraints and small holders' dairy production in the East African highlands: Application of Switching Regression Model. *Agricultural Economics*, 19. 33-44.



- Fuglie, K. O. and Bosch, D. (1995). Economic and environmental implications of soil nitrogen testing: A Switching Regression Analysis. *American Journal of Agricultural Economics*, 77(4):15-19.
- Ihugba, O. A., Odii A. and Njoku, A. C. (2013). Challenges and prospects of entrepreneurship in Nigeria. *Academic Journal of Interdisciplinary Studies*, 2(5):25-36
- Lee, L. (1978). A Simultaneous equations model with qualitative and limited dependent variables. *International Economic Review*, 19(2):415-433.
- Madalla, G.S. (1983). **Limited dependent and qualitative variables in economics**. New York: Cambridge University Press, Pp. 257-291.
- Miftahu, I. and Habiba, A. B. (2023). Role of women farmers in economic development of Ibi Local Government Area, Taraba State, Nigeria. *Asian Journal of Economics and Business*, 9(4):103-122.
- National Population Census (2006). National Population Census Report, Federal Government of Nigeria. www.nigerianstat.gov.ng
- NiMET (2019). Nigerian Meteorological Agency Annual Weather Report. National Headquarter, Federal Capital Territory, Abuja, Nigeria.
- Nnadozie, B. and Ibe, L. (2000). Women in agriculture: Problems and prospects. In: Nwosu, A. C. Nwajiuba, C. U. and Mbanasor, J. A. (editors): *Agricultural Transformation in Nigeria*. Owerri, Imo State, Novelty Industrial Enterprises.
- Onyemobi, F. I. (2000). **Towards agricultural revolution rural development**. In: Onyemobi, F. I. (editor). *Women in agriculture and rural development towards agricultural revolution in Nigeria*. Enugu Nigeria: Falude publishers. Pp. 12-19.