

Espousal of Crop Technologies by Rural Dwellers in Ringim

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Abstract : *The study examined the adoption of Agricultural crops technologies by rural dwellers in Jigawa State, Nigeria. Specifically, the study was carried out to ascertain the technologies adopted in horticultural crop production, motives for participation in the production, sources of information to the farmers, constraints to adoption of the technologies, and the socio-economic determinants of adoption of the technologies by the farmers. Data were collected from 125 randomly sampled farmers with the aid of semi-structured and validated questionnaire. The data were analyzed using frequency counts, percentages, mean and Ordinary Least Square (OLS) Multiple Regression analysis. The results showed that the production technologies adopted were used to improve crop varieties (70.0%), use of fertilizers (90.0%), irrigation (89.0%), mulching (69.0%) and seed treatment before planting (59.1%). It also revealed that the motives for participation in horticultural farming included increased access to horticultural crops for household consumption (Mean = 2.92), income generation (mean = 3.42), and employment creation (Mean = 3.11). The major sources of information on dry season vegetable production were informal interaction with neighbors/friends (35.7%), Extension Agents (EAs)(14.8%), the radio (12.5%) and the television (11.3%). The constraints included scarcity of land (88.7%), lack of water for irrigation (70.5%) and lack of awareness on horticultural crop farming (50.6%). The socio-economic determinants of participation in horticultural crop farming included; major occupation, income level, period of time living in city and access to land. The findings concluded that horticultural crop farming in Ringim Local Government Area was beneficial for ensuring households' access to horticultural crops, increased income generation and alternative means of providing employment to the rural dwellers of the study area.*

Keywords: *Espousal, Agricultural Crop, Production, Technologies, Rural Dwellers*

Introduction

Agricultural development organizations' main goal is to persuade farmers to adopt agricultural technologies. Development will result from the transfer of innovation and information from research units to farmers. As a result, the primary responsibility of an agricultural extension agent in technology transfer is to assist farmers in implementing ready-made technologies, even if they are not always appropriate (Isa, 2014).

The technology adoption process is a mental process that takes a person from first hearing about an innovation to making the final decision to utilize it, whereas adoption is the decision to use the technology in its entirety (Ekong, 2003). Adoption is the decision to continue full usage of an innovation once an individual has gone through certain mental processes, to put it another way. The innovation-decision process is the mental process through which a person moves from first learning about an innovation to deciding whether to adopt or reject it, and then to confirming that decision. Many diffusion scholars have identified five stages in the process: awareness (initial understanding of the new idea), interest (gaining additional knowledge of the invention), evaluation (gaining a favorable or unfavorable attitude toward the idea); to a small-scale trial (demonstration on a small plot); and lastly, to a choice on whether or not to adopt or reject the innovation (Rogers, 1995).

The term technology has been perceived by various authors from different perspective. Rogers (1995), used the words 'technology and innovation' synonymously and defined technology as the design for instrumental action that reduces the uncertainty in the cause-effect relationship involved in achieving a desired outcome. The real application of that information, according to Mahmoud (2005), is what is referred to as technology. A more accurate definition would be that technology is a collection of 'new ideas.' Uncertainty is a part of the process of developing new ideas As a result, there is a lack of reliability in their results. Technology, according to Pingali (2009), is defined as the activities to be completed, some services supplied, or some items made.

Technology, according to Adekoya and Tologbonse (2005), is defined as the use of knowledge for practical objectives such as improving the human and natural environment's condition and carrying out other socio-economic activities. It's a complicated mix of materials, procedures, and expertise. A new technology is any set of productive techniques that, in a specific historical context, offers a considerable improvement (whether evaluated in terms of increased production or cost savings) over an existing way for a given process (Isa, 2014). Persuading farmers to accept agricultural advances is one of the main goals of agricultural development organizations. Agricultural extension agents' role, according to the transfer of technology (TOT) model, is to assist farmers in implementing blue prints or ready-made technologies, even if they are not suitable. Farmers' potential to design and disperse

technologies that are more acceptable is strengthened through participatory technology creation and participatory extension (Isa, 2014). Idrisa, *et al* (1998) has reported that, adoption of an innovation involves a change in the orientation and behaviour of the farmer from the time she or he becomes aware of the innovation to its final adoption. Ani (2007), noted that, farmers decision about whether or not to adopt a recommended agricultural practice is recognized to occur over a period of time in stages which include *Awareness, Interest, Trial and Adoption*. Thus, the process of adoption and using innovations among farmers is a complex one which involves a sequence of thoughts and actions. Adekoya and Tologbonse (2011) have shown that a farmer's decision about whether to adopt or not to adopt a recommended agricultural practice occurs over a period of time in stages rather than being instantaneous. Therefore, to adopt innovations, farmers must become aware and undergo series of adoption stages.

The level of adoption of an innovation can be influenced by personal, economical, socio-cultural and communication factors. The characteristic of the innovation also plays an important role in its adoption by individuals. Most scholarly discussions on adoption fall in two categories: rate of adoption and intensity of adoption, each of these have different policy implication. Rate of adoption for example implies the relative speed with which farmers adopt an innovation. It has one of its pillars the element of 'time'. Intensity of adoption on the other hand, refers to the level of the use of a given technology in any time period (Wabbi, 2002). In view of the fact that technology adoption is a gradual process and farmers differ in their willingness to accept innovations and the relative time they take to adopt these innovations, Rogers (1995) classified adopters into five categories, namely: innovators, early adopters, early majority, late majority and laggards. Several factors influence innovativeness or willingness to accept new ideas or take risks. The factors which influence the adoption of agricultural innovations have been broadly classified by Isa, (2014) as follows:

1. Personal characteristics of farmers which includes age, sex, family size, leadership status, nearness to research station or university farm size, income, level of education, contact with extension workers, Cosmo politeness, mass media exposure and years of farming experience.
2. Characteristics of the innovation which include cost of innovation, triability, complexity, compatibility, with cultural norms and farming system relative advantage and observability.
3. Psychological factors which include change-proneness, level of aspiration to socio-economic goal, fear and anxiety, perceived risk and uncertainty.
4. Situational constraints: These include insecure land tenure, lack of access to credit, lack of access to ready markets, poor road network and inability to obtain specific inputs.

Feder (1985) defined adoption as the degree of use of a new technology in a long run equilibrium when a farmer has full information about the new technology and its potential. Therefore, adoption at the farm level describes the realization of farmers' decision to apply a new technology in the production process. On the other hand, aggregate adoption is the process of spread or diffusion of a new technology within a region. Therefore a distinction exists between adoption at the individual farm level and aggregate adoption within a targeted region. If an innovation is modified periodically, however, the equilibrium level of adoption will not be achieved.

Rogers (1995) presented four additional adoption/diffusion theories.

a) Innovation Decision Process Theory.

Potential adopters of a technology progress over time through five stages in the diffusion process. First, they must learn about the innovation (knowledge); second, they must be persuaded of the value of the innovation (persuasion); they then must decide to adopt it (decision); the innovation must then be implemented (implementation); and finally, the decision must be reaffirmed or rejected (confirmation). The focus is on the user or adopter.

b) Individual Innovativeness Theory.

Individuals who are risk takers or otherwise innovative will adopt an innovation earlier in the continuum of adoption/diffusion.

c) Rate of adoption theory.

Diffusion takes place over time with innovations going through a slow, gradual growth period, followed by dramatic and rapid growth, and then a gradual stabilization and finally a decline.

d) Perceived attributes theory.

There are five attributes upon which an innovation is judged: that it can be tried out (trial ability), that results can be observed (observability), that it has an advantage over other innovations or the present circumstance (relative advantage), that it is not overly complex to learn or use (complexity), that it fits in or is compatible with the circumstances into which it will be adopted (compatibility).

Each of the above can be considered in the context of either a top-down or a bottom-up adoption/diffusion process and in either macro-level or micro-level reforms.

The term 'Horticultural crops' is usually used to designate the tender edible shoots, leaves, fruits and roots of vegetable plants that are eaten whole or in part, raw or cooked, as a supplement to starch food and meats. Most of them are herbaceous and the definition not includes sweet dessert fruits. Vegetables are usually harvested when the plant is fresh and high in moisture and are thus distinguished from field crops, which are harvested at the mature stage for their grains, pulses, oilseeds or fiber.

The edible portions of plants which are referred to as the vegetables, excluding fruits and seeds, and are normally consumed as part of the main course of a meal. Vegetable' is usually used to designate the tender edible shoots, leaves, fruits and roots of plants that

are eaten whole or in part, raw or cooked, as a supplement to starch food and meats. Vegetables are usually harvested when the plant is fresh and high in moisture and thus distinguished from field crops, which are harvested at the mature stage for their grains, pulses, oilseeds or fiber.

Horticultural crops or vegetables have the following characteristics:

Seasonality: Most horticultural crops are seasonal. They grow best during certain seasons or in certain places. Demand for certain horticultural crops are sometimes higher during certain periods of the year. Several species of horticultural crops can be grown throughout the year, however, here are some examples that can be grown only during certain times of the year. Though, if there is the availability of irrigation, many species can be grown throughout the year.

Perishability: Because of their high moisture content (85-90%), horticultural crops are perishable and although the shelf life of many root crops may extend over weeks, deterioration, particularly of the leafy salad crops, sets in soon after harvest.

Bulkiness: They are bulky in relation to their volume and this is aggravated by the further needs of packing to protect them from damage.

High capital requirements: Horticultural crops are intensively cultivated crops. They require intensive cultural practices and the financial and labor inputs involved are therefore greater than those needed for most staple food such as rice or maize.

Susceptibility to damage: Crops can only be stored for relatively short period of time and utilized mainly when they are fresh. Horticultural crops may suffer from wind damage when grown on exposed sites where some form of protection will be desirable. For example, runner beans are susceptible for such damage.

Diversity: Considering their diversity nature, a plant may be considered as a horticultural crop in one country but a fruit, weed, ornamental or medicinal plant in another country, depending on the crop. For example, tomato is a vegetable in Asia but a fruit in Europe. The garland chrysanthemum, is a vegetable to some Asians, to others, it is an ornamental. Although melons are generally used for dessert, they are considered as vegetable; since many members of the cucurbits family are vegetables. In some cases, a plant could be a vegetable only at ascertains growth stage. The bamboo is a crop used for its wood but bamboo shoot is a vegetable. Some of the legumes can be used at various stages of development; the sprouted seeds, the tender shoots, the immature tender pods, and the mature seeds. Some fruits, such as papaya and jackfruit, are used as vegetable in south East Asia when they are immature.

Generally, technology connotes mechanical, electrical and other such scientific inventions. It is also a way or method or technique of doing, making or producing something. It refers to the systematic application of scientific and other organized knowledge to practical purposes that include new ideas, innovations, inventions, techniques, methods and materials (Asiabaka, 2010). Agricultural technology can be defined specifically as consisting of the nature, system and types of available inputs that are combined to carry out agricultural activities. It may include inputs such as seeds, fertilizers, chemicals, tools, machines, etc and the way in which they are combined to perform agricultural operations. Improved technology in agriculture includes all materials, techniques, practices and innovations used to maximize agricultural production. These may include high yielding varieties of crops, early maturing crops and animals, herbicides, use of synthetic irrigation, good drainage systems, fertilizers, etc).

Farming is commonly associated with the rural dwellers especially in developing countries like Nigeria. This is so because farming is the dominant livelihood activity of most rural inhabitants. However, the growing population of low income households in most cities in Nigeria and the need to feed them have further underscored the importance of this new concept called urban farming. Urban farming is the growing of plants and raising of animals for food and other uses, as well as related activities such as the production and delivery of inputs and the processing and marketing of agricultural products within urban settlements. In most countries, urban farming is often promoted as one of the strategies to reducing food deficits in the cities. It is also a good source of vitamin enriching foods among poor households in most cities in Nigeria and other African countries. Pingali *et al* (2006) also shared the view that rapid population growth and urbanization in developing countries like Nigeria imply high demand for food and require urgent supply response to prevent widespread famine, especially among low income consumers.

Tansa (1996) observed that poorest households spend up to 90% of their meager income on food. Government and Developmental Agencies have adopted different strategies to eradicate the high spending on food item and the increasing malnutrition of urban poor. Food subsidies, Food Stamps, School Children and Mother Feeding Programmes have been experimented in many nations of the world with very little success. These household food security management strategies operated on top to bottom approach, ignoring the opinions of the intended beneficiaries. And the consequence of such negligence has always been that of a high apathy towards the adoption or participation of the people in those programmes. It was in a bid to bridge this gap, that Drescher (1996) stressed the need for an individual household micro level strategy such as urban farming.

Meanwhile, it is pertinent to stress that horticultural crop production is a very important aspect of rural farming. Not only that it yields high return on investment, it also provides quick access to high quality food sources to poor households. Unfortunately, despite

all these contributions, rural horticultural crop production is largely misconceived. This misconception stems from limited information based on rural horticultural crop production (Von Braun and Immink, 1994).

Based on the above situations therefore, the questions, which this study sets out to answer on Adoption of Horticultural crop production by farmers in Ringim Local Government Area, included:

- What are the socio-economic characteristics of Horticultural crop farmers in Ringim Local Government Area of Jigawa State, Nigeria?
- What are the reasons for engaging in Horticultural crop production?
- What are the sources of agricultural information to the Horticultural crop farmers?
- What are the technologies adopted by Horticultural crop farmers in the study area? and
- What are the factors influencing the adoption of improved technologies by Horticultural crop farmers in the study area?

The broad objective of this study was to assess espousal of technologies in agricultural crop production in Jigawa State, Nigeria.

The specific objectives were to:

1. illustrate the socio-economic characteristics of agricultural crop farmers in the study area.
2. identify sources of agricultural information and rationale for engaging in agricultural crop production.
3. determine the technologies adopted by the farmers in the area, and
4. ascertain the socio-economic determinants of the espousal of available technologies.

Research hypothesis

H₀ The socio-economic variables of the farmers are not the determinants of espousal of vegetable crop production technologies in the study area.

Methodology

Jigawa State is one of 36 States of Nigeria. It is situated in the north-western part of the country between latitudes 11.00°N to 13.00°N and longitudes 8.00°E to 10.15°E. Kano State and Katsina State border Jigawa to the west, Bauchi State to the east and Yobe State to the northeast. To the north, Jigawa shares an international border with Zinder Region in the Republic of Niger.

The state has land area of approximately 22,410 square kilometres. Its topography is characterized by undulating land, with sand dunes of various sizes spanning several kilometres in parts of the State. Most parts of Jigawa lie within the Sudan Savannah with elements of Guinea Savannah in the southern part. Total forest cover in the state is below national average of 14.8%. Due to both natural and human factors, forest cover is being depleted, making northern part of the state highly vulnerable to desert encroachment. The state enjoys vast fertile arable land to which almost all tropical crops could adapt, thus constituting one of its highly prized natural resources. The Sudan savannah vegetation zone is also made up of vast grazing lands suitable for livestock production.

The socio-cultural situation in Jigawa State could be described as homogeneous: it is mostly populated by Hausa/Fulani. Kanuri are largely found in Hadejia Emirate who maintain their ethnic identity, Islam and a long history of inter-marriages have continued to bind them together.

About 3.6 million people inhabit Jigawa State. Although population of the state is predominantly rural (90%), the distribution in terms of sex is almost equal between male (50.8%) and female (49.2). About 60% of household heads were self-employed with agriculture as their main occupation, and nearly 67% of these households were monogamous families. The overall literacy rate was about 37% as at 2002 Basic indicators for water supply sector show that access to potable water is over 90%, which is among the highest in the country. Islam is the predominant religion in Jigawa state followed by Christianity and few traditional religion.

Ringim is a Local Government Area (LGA) of Jigawa State. It has an area of 1,057 km² and has an estimated population of 192,024 people as at 2006 census. 5 wards were randomly sampled from the study area, out of which 25 horticultural crop farmers were selected to give a total of 125 horticultural crop farmers who were interviewed for the study. The list of all the horticultural crop farmers were compiled with the aid of the Extension Agents and used as the sampling framework. Data were collected from both primary and secondary sources. The primary data were composed using structured and validated questionnaire and interview schedule. Information from previous periodicals constituted the secondary sources of data.

Simple statistical tools such as frequency counts, percentages, tables and mean were used in analyzing the data collected. Also, the response items were measured using a 4 – point-Likert type scale of Strongly Agreed (SA= 4), Agreed (A = 3), Disagreed (D = 2), and Strongly Disagreed (SD =1). The midpoint for taking decision was obtained by adding up the values of the scale (i.e. 4+3+2+1 = 10) and divided by the number of scale (i.e. 4) to give a mean value of 2.5. Any mean score that is greater or equal to 2.5 was regarded as agreed while those less than 2.5 were taken as disagreed.

Also, Ordinary Least Square (OLS) regression analysis was used to ascertain the socio- economic determinants of adoption of improved dry season urban vegetable production technologies. For the regression analysis, the four functional forms (linear, semi-log, double-log, and exponential functions) of the OLS were tested and the one that produced the best fit in terms of conformity to a

priori expectations, number of significant variables, size and signs of regression co-efficient, and the magnitude of the co-efficient of multiple determination (R^2) was selected as the lead equation and thus, was used for the prediction of the determinants. The model is specified as follows;

$$Y = f(X_1, X_2, X_3, X_4, X_5, X_6, X_7, E)$$

Where;

Y = index of adoption (percentage of technologies adopted out of the total technologies listed)

X₁ = Sex (male = 1, female = 0)

X₂ = Age (measured in years)

X₃ = Major occupation (Full time vegetable farming = 1, part time vegetable farming = 0)

X₄ = Household size (the number of persons sharing one roof and feeding with one pot)

X₅ = Years spent in school (years spent in formal school)

X₆ = City farming experience (years spent in city farming)

X₇ = Estimated monthly income (in naira)

E = Error term.

Results and Discussion

Socio-economic characteristics of the farmers

Table 1 indicates that, majority (52.0%), of vegetable crop farmers in the study area were males aged between 41 – 50 years and considered vegetable production as their major occupation. The mean age of the farmers was (42.5) years, this implies that they were in their active years and can easily adopt innovations. Other researchers reported that, adoption of innovation is inversely related to age. Younger people are more prone to innovation (Isa, 2014; Aja et al, 2010; Asiabaka, 2010). The table further reveals that most of the farmers had a moderate household size of between 1 - 5 persons (58.4%). It was revealed that most (46.4%), of the farmers had up to secondary education and spent between 6 – 10 years in farming. The estimated monthly income of the majority of the farmers was less than= N=10,000.00. However, their average monthly income was =N= 20,728.00, which implies that majority of the respondents were poor.

Table 1: Distribution of the respondents according to socio-economic variables

Variables	Percentage	
Sex		
Male	89.00	
Female	11.00	
Total	100.00	
Age(years)		
21 - 30	10.0	
31 - 40	20.80	Mean = 42.5yrs.
41 - 50	65.00	
51 and above	5.00	
Total	100.00	
Major Occupation		
Full time	88.00	
Part time	12.00	
Total	100.00	
Household size		
1 – 5	62.40	
6 – 10	25.60	Mean = 5.5
11 – 15	10.00	
16 and above	2.00	
Total	100.00	
Years spent in school		
1 – 6	22.40	
7 – 12	46.40	Mean = 9.3yrs
13 and above	31.20	
Total	100.00	
City farming experience(years)		
1 – 5	30.40	
6- 10	36.80	
11- 15	20.80	Mean = 11.4yrs
16 and above	12.00	
Total	100.00	
Monthly income (N)		
Less than 10,000	32.00	
11,000 – 20,000	26.40	Mean = N20,728
21,000 – 30,000	16.00	
31,000 – 40,000	20.00	5.60
41, 000 and above	100.00	
Total		

Source: Field Survey, 2025

Production Technologies Adopted by the Farmers

Table 2 reveals that the technologies adopted by the respondents included; use of improved varieties of crops (70.0%), seed treatment before planting (59.1%), replacement/supplying (37.0%), irrigation (89.0%), use of fertilizers (95.6%), and maintenance of recommended spacing (34.0%). Others were mulching (63.0%) and staking (81.7%). The result implies that the farmers had a favorable disposition to recommended horticultural crop production technologies available to them. The presence of Agricultural Development Program (ADP) office in the study area which assisted the respondents in disseminating the modern technologies and how best to utilize them could have been reason for high level of technology adoption by the farmers in the area.

Table 2: Distribution of the Respondents According to Technologies Adopted

S/N	Technologies	*Percentages
1.	Use of improved varieties of crops	70
2.	Seed treatment before planting	59.1
3.	Replacement/supplying	37.0
4.	Line planting	11.3
5.	Irrigation	89.0
6.	Use of fertilizers	95.6
7.	Maintenance of recommended spacing	34.0
	Mulching	63.0
8.	Staking	81.7
9.	Drainage	18.3
10.	Rouging	10.0

Source: Field Survey, 2025 *Multiple response

Sources of agricultural information

Data in Table 3 show that information from neighbors/fellow farmers accounted for the highest means of getting agricultural information with 35.7 percent, followed by extension agents (14.8%). Television accounted for 11.3 percent while research institutes had 9.6 percent. Other sources of information to the farmers included cooperative society (8.7%), and radio (8.7%). This implies that informal sources of information are still common among rural farmers in the study area. The high rating of television as a source of agricultural information may shoot due to the fact that most people prepare electricity facilities to ease their communication purposes.

Table 3: Distribution of vegetable farmers according to sources of agricultural information

Sources	*Percentage
Neighbors/fellow farmers	35.7
Extension agents	14.8
Cooperative society	8.7
Research institute	9.6
Radio	8.7
Television	11.3
Newspaper/magazine	1.7
News letter	6.1
Internet	1.7

Source: Field survey, 2025.

Reasons for engaging in agricultural crop production

Table 4 reveals that the agricultural crop farmers engaged in the enterprise for many reasons, among which include: for household consumption (Mean = 2.92), income generation (Mean = 3.42), and gainful employment (mean = 3.11). Other reasons included land ownership consolidation (Mean = 2.95), to utilize available land areas (3.41), and to utilize opportunity created by nearby markets in the study area (mean = 2.95). The table further indicate that aesthetic purposes (Mean = 1.91), and production of raw materials (Mean = 1.95) were not important reasons for engaging in urban vegetable production. The findings supported other studies of (Mohammed and Abdullahi, 2010; Akinlade *et al*, 2013) who reported that reasons for horticultural crop farming included food access to household, alternative income source and employment opportunities to teeming populace in the study area.

Table 4: Distribution of the respondents according to their agricultural production

S/N	Reasons	Mean
1.	Access to horticultural crop for house hold generation For income generation	2.92*
2.	For employment generation	3.42*
3.	To consolidate land ownership	3.11*
4.	To utilize opportunity created by nearby markets To utilize available land areas	2.95*
5.	To produce raw materials	2.96*
6.	To beautify the surroundings	3.41*

Source: Field survey, 2025

Socio-economic determinants of espousal of agricultural crop production

The multiple regression results in Table 5 show that the exponential function of OLS produced the best fit in terms of the number of variables that were statistically significant, the signs and magnitude of the regression coefficients, and the value of coefficient of multiple determination (R^2). The value of the coefficient of multiple determination (R^2) was found to be 0.7938, which implies that about 79 percent variations in the adoption of horticultural crop production technologies was accounted for by the joint action of the socio-economic variables investigated. The coefficient of years spent in school ($t = 3.1728$), and income level ($t = 2.8261$) were significant at 1% probability level. By this result, it means that formal education and income level were important factors influencing the adoption of technologies. This is in corresponds with the findings of Isa, (2014), Aja *et. al.* (2013) and Ifeanyi-Obi (2013). Similarly, the coefficient of age, major occupation, household size, and city farming experience were all significant at 5% probability level, indicating that these variables were among the socio-economic determinants of adoption of the technologies. The F-value was found to be 26.7001 and was significant at 5% probability level. Based on the result, the hypothesis was stated that the socio-economic variables of the farmers were not the determinants of adoption of the horticultural crop production technologies was rejected. It was therefore concluded that the socio-economic characteristics of the farmers were the determinants of adoption of the horticultural crop production technologies. This result is supported by the findings of Nnadi and Amaechi (2004), Asiabaka (2010), and Ifeanyi-Obi (2013).

Table 6: Socio-economic determinants of espousal of agricultural production

Explanatory Variables	Linear Function	Semi-log Function	Double-log Function	Exponential Function
Constant	8.3043	12.4414	12.3918	18.1083
X ₁	0.5549 (1.1145)	2.7814 (0.9875)	0.0851 (1.0541)	0.0093 (1.1772)
X ₂	4.1893 (1.0736)	1.7545 (1.1856)	0.1608 (3.1103)*	- 0.0092 (-2.2439)*
X ₃		1.4914 (0.8822)	0.0782 (3.6037)*	0.0078 (2.5161)*
X ₄	5.6719 (2.7921)*	1.5928 (1.2982)	0.0659 (2.7119)*	0.0087 (3.7826)*
X ₅	7.4163 (3.5825)*	2.5814 (1.1827)	0.0227 (2.7349)*	0.0092 (3.1728)**
X ₆	6.399 (1.1239)	0.8413 (1.0653)	0.0689 (1.1514)	0.0076 (2.7143)*
R ²	3.6605 (1.2218)	1.2281 (2.9942)**	0.917 (1.0713)	0.0065 (2.8261)**
F-value	5.447 (1.0917)	0.40231 9.5876*	0.6029 21.5321*	0.7938 26.7001*
Observation	0.4936 14.1029*			
	125	125	125	125

Source: Field Survey, 2025** = t- ratios significant at 1% probability level
 * = t-ratios significant at 5% probability level Figures in parenthesis are t-ratios

Conclusion

The study portrays that vegetable production is an important livelihood business for low income household earners in Ringim Local Government Area of Jigawa State. The farmers engaged in agricultural crop production for the purposes of producing vegetables for household consumption, income generation, employment, and consolidation of land ownership. The farmers furthermore adopted most of the recommended horticultural crop production technologies.

Recommendation

Consequently, the study recommends that:

1. Agricultural crop production should be encouraged and strengthened through relevant policies by the governments and other agricultural stakeholders. Other institutional support such as credit facilities, subsidized inputs, extension services, etc. should be provided to the farmers. This encourages more households into the vegetable farming practice, and hence boosts food availability particularly to the poor households in the study areas.
2. The socio-economic variables of the people should be considered when designing technologies aimed at improving agricultural crop production. This enhances the acceptability of the technologies.

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CONFLICT OF INTEREST

The author declares that there is no conflict of interest with regards to this research

AUTHOR’S BIOGRAPHY

Umar Isa is an accomplished Agricultural Researcher with a strong academic and professional background in agricultural science, rural development, and technology adoption in crop production systems. His research interests focus on improving the productivity, sustainability, and economic viability of smallholder farming through the adoption of modern agricultural technologies, particularly in horticultural and crop-based enterprises.

Mr. Isa has participated in numerous field-based studies addressing key issues such as technology dissemination, farmers’ socio-economic characteristics, and constraints affecting agricultural innovation in rural communities. His scholarly work emphasizes evidence-based approaches to enhancing agricultural practices and policy formulation for food security and rural livelihood improvement.

He is dedicated to advancing knowledge in agricultural research and extension, fostering collaboration between researchers, practitioners, and policymakers to promote sustainable agricultural development in Nigeria and beyond.

COVER LETTER

Department of Agricultural Economics and Extension
Kano University of Science and Technology Wudil, Nigeria.

27th October, 2025

The Editor,
International Journal of Academic and Applied Research.

Dear Sir,

Submission of manuscript

I write to notify you that, I submitted my article titled "**Espousal of Crop Technologies by Rural Dwellers in Ringim Jigawa.**" to your esteemed journal of great reputation for reviewing and possible publishing if found worthy of. I decided to use your journal as a medium to contribute my quota to the body of knowledge as other researchers do. I hope my article will be accepted and eventually published by your renowned journal.

Regards.

Umar Isa.

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AUTHOR'S CONTRIBUTION

Author UI took all the responsibilities of writing the manuscript, collecting data from the field, entering, cleaning and analyzing the data and finally drawing inference from the already collected data.

ETHICAL APPROVAL

The research topic was approved by the committee installed by the institution I work with for the purpose of this reason before embarking on the research. Equally, the respondents that participated during data collection fully and sincerely agreed to provide useful information related to the study area.

CONSENT TO PUBLICATION

This has been obtained by the author and all the respondents involved in this research were very much aware of the possible consequences of publication of the information they provided to the researcher.