International Journal of Education, Management Sciences and Professional Studies (IJEMPS)
Vol. 2 Issue 2, 2026 PRINT *ISSN:3115-5065* || E-ISSN:3115-5545
URL: https://journals.iempsglobal.org/index.php/IJEMPS

ROLE OF AGRICULTURAL EDUCATION IN ENVIRONMENTAL STEWARDSHIP AND ECONOMICS VIABILITY IN RIVERS STATE

Lazarus S.T.
ORCID: https://orcid.org/0009-00003-4095-0860 .07048433692
Sarah.lazarus@ust.edu.ng

Nlebem, B.S.
Bernard.nlebem@ust.edu.ng

Okpokiri Ogechi
09018963369

[1-3] Department of Agricultural Education, Rivers State University, Port- Harcourt.

Correspondence: Sarah.lazarus@ust.edu.ng

Abstract

The study examined the role of agricultural education in promoting environmental stewardship and economic viability in Rivers State, Nigeria. The study was guided by three research questions and three null hypotheses. A descriptive survey research design was adopted, and a sample of 120respondents drawn from agricultural educators, extension workers, and students was analyzed. Target population is 120, Data were collected using a self-structured questionnaire Role of Agricultural Education in Environmental Stewardship and Economics Viability Questionnaire (RAE ESEVQ) designed in a 4-point rating scale of strongly agreed, the reliability of the instrument was established using mean, standard deviation, and Z-test at a 0.05 significance level, the findings revealed that agricultural education significantly contributes to environmental stewardship by promoting sustainable farming practices such as soil conservation, waste management, and afforestation. It also influences economic viability by equipping individuals with entrepreneurial skills, agribusiness knowledge, and income-generating opportunities. The study concludes that agricultural education is a critical driver of sustainable development in Rivers State. To maximize its impact, curriculum reforms, increased funding, teacher capacity-building, and gender-inclusive policies are recommended. The study therefore recommends that strengthening agricultural education will not only enhance environmental stewardship but also improve economic empowerment and long-term sustainability in the state.

Keywords: Agriculture, Education, Environmental Stewardship, Economic, Viability.

Introduction

Agricultural education in Nigeria has been a multi-modal tool for both sustainable resource management and rural economic development. Recent Nigerian studies argue that modern agricultural education must combine formal classroom instruction, hands-on farm practice, vocational training and digitally enabled extension to build the technical, managerial and entrepreneurial capacities required for 21st-century farming (Eneji, 2021, Innocent-Ene, Suleiman and Sanni, 2021, Baridoma and Afen, 2024). Scholars emphasizes that this integrated approach mixing agronomy, agro ecology, value-chain skills and e-agriculture literacy is essential to help smallholders adopt conservation practices while improving productivity and incomes, Agricultural education has an urgent role because of overlapping environmental pressures oil-related contamination, land-use change, and erosion and structural economic constraints facing smallholder producers (limited access to markets, postharvest loss, and weak technical support). Empirical work from Rivers State institutions shows that curricular relevance (locally adapted content), well-resourced school farms and stronger linkage to extension services significantly increase students' practical competencies and the likelihood that techniques taught in classrooms are adopted at household and community levels Baridoma and Afen, 2024, assessment of resources for vocational skills development in Rivers State, 2019.

Agricultural education alone will not deliver stewardship or profitability unless accompanied by functioning extension, access to finance, up-to-date curricula and market linkages. Extension and advisory services are therefore framed as the operational bridge that turns knowledge into practice and income (World/FAO frameworks and national reviews, Oba and Ahmed, 2022; studies on the role of extension workers, 2024). At the same time, national analyses of food security and sector investment (2025) underline how improved education and extension contribute to resilience against climatic and environmental shocks outcomes directly relevant to Rivers State's mixed rural/ peri-urban farming systems (National/regional food-security reviews 2019). Agricultural education serves as a vehicle for environmental awareness and the promotion of sustainable farming practices, Studies in Nigeria show that farmers who undergo training in improved agricultural techniques are more likely to adopt eco-friendly practices such as integrated pest management, soil conservation, and agroforestry (Eneji 2021, Innocent-Ene, 2021).

In Rivers State, Baridoma and Afen (2024) report that incorporating environmental management into vocational agricultural curricula increases students' competencies in soil fertility maintenance and water conservation. Similarly, Bell-Gam and Oyebamiji (2024) argue that agricultural education is pivotal in addressing Niger Delta's environmental degradation through participatory community training that empowers farmers to restore degraded ecosystems, Economic viability in agriculture depends on profitability, resilience, and

sustainability of farming enterprises. Scholars emphasize that agricultural education equips learners with entrepreneurial, postharvest, and value-chain skills that directly translate into improved farm income (Oba and Ahmed, 2022; Akpan 2019). In Rivers State, studies reveal that youth exposed to agribusiness modules are more inclined to establish micro-enterprises and diversify income sources (Baridoma and Afen, 2024). Nationally, agricultural education has been shown to reduce postharvest losses and improve market access when training includes agribusiness management (Innocent-Ene 2021). Extension is often identified as the bridge between agricultural education and practice. Okeke and Okocha (2020) highlight that extension services enhance technology adoption, while Oba and Ahmed (2022) stress that coordinated extension strengthens farmer resilience and food security. In Rivers State, extension-driven demonstration farms have been shown to increase awareness of conservation practices and improve income-generating skills Bell-Gam and Oyebamiji, (2024).

Despite these gains, weak funding and limited manpower constrain extension effectiveness, reducing the overall impact of agricultural education. Agricultural education in Nigeria has been positioned as a pathway to achieving SDG 2 (Zero Hunger), SDG 8 (Decent Work and Economic Growth), and SDG 13 (Climate Action). According to Adeyemi and Olorunfemi (2019), agricultural education equips learners with competencies that link directly to food security and climate-smart agriculture. In Rivers State, Nkpoyen and Bassey (2020). highlighted that aligning agricultural curricula with global sustainability frameworks fosters environmental awareness among youths, preparing them to act as custodians of natural resources while ensuring future livelihoods, Climate change and environmental degradation are central challenges in the Niger Delta. Scholars note that climate-smart agricultural (CSA) practices such as conservation tillage, crop diversification, and efficient water management are more readily adopted by educated farmers (Olaniyi and Ajayi, 2019; Olanrewaju, 2021).

For instance, Bello and Usman (2022) reported that farmer-field schools integrating CSA modules improved resilience to flooding and drought in South-South Nigeria. These findings are significant to Rivers State, where seasonal flooding and land pollution threaten agricultural productivity. Modern agricultural education emphasizes the integration of digital technologies for enhanced productivity and environmental monitoring. According to Okeke and Okocha (2020), exposure to e-agriculture platforms increases farmer efficiency in market access, pest control, and soil fertility management. Chukwu and Agada (2023) demonstrated that Nigerian students trained in precision farming tools (such as drones and soil sensors) showed higher competence in applying environmentally friendly techniques. In Rivers State, such integration has the potential to counterbalance oil-induced environmental degradation by promoting precision-based, less wasteful agricultural practices, several studies emphasize that women play a pivotal role in environmental stewardship but are often excluded from formal agricultural training. Ugwu and Igbokwe (2020) stressed that incorporating gender-sensitive agricultural education improves not only environmental outcomes but also household income. In Rivers State, Ahiakwo (2022) observed that women-led cooperative societies trained in sustainable vegetable production significantly reduced pesticide misuse and enhanced food safety. This underscores the importance of inclusive agricultural education as both an

environmental and economic strategy, Youth participation in agriculture is declining due to unemployment, urban migration, and perceptions of farming as unattractive. However, agricultural education reforms that include entrepreneurship and agribusiness training have shown potential in re-engaging youth. Adebayo and Yusuf (2021) found that Nigerian youths exposed to agribusiness incubation centres were more likely to pursue profitable farming ventures. Similarly, Weli and Eremie (2023) observed that Rivers State youth trained in aquaculture production through school demonstration farms not only improved technical skills but also generated income, enhancing both economic viability and local food security.

Educational policy plays a critical role in determining the effectiveness of agricultural education. The Federal Ministry of Education (2020) emphasized the integration of environmental education in technical and vocational curricula, but implementation remains uneven across states. In Rivers State, policy-practice gaps manifest as underfunded agricultural laboratories, poorly equipped school farms, and weak partnerships with industries (Ezekiel and Adede, 2022). This institutional weakness undermines agricultural education's ability to simultaneously address environmental stewardship and economic viability; Comparative studies show that regions that prioritize agricultural education reforms experience better outcomes in sustainability and profitability. For instance, in Oyo State, Olaitan and Alabi (2019) demonstrated that vocational training reduced postharvest losses by 30%. In Kaduna State, Musa and Bello (2021) found that farmer training in agroforestry increased soil fertility and provided alternative income streams. These findings suggest that similar strategies, if fully adopted in Rivers State, could yield dual benefits in environmental and economic domains, Nigerian scholarship consistently underscores agricultural education as a driver of sustainable practices and economic transformation. While national-level evidence affirms its relevance, Rivers State-specific studies reveal persistent challenges such as outdated curricula, underfunded institutions, and weak extension linkages. Nevertheless, opportunities exist: integrating climate-smart practices, promoting digital agriculture, empowering women and youth, and addressing policy gaps, Recent studies highlight critical gaps in Rivers State: outdated curricula, inadequate resources in vocational agricultural schools, insufficient integration of climate-smart practices, and weak institutional linkages (Eneji, 2021, Baridoma and Afen, 2024). These gaps hinder the dual role of agricultural education in promoting environmental stewardship and ensuring economic viability.

Agriculture in Rivers State faces severe challenges, environmental degradation from oil exploitation, soil erosion, and water contamination, alongside weak economic outcomes such as low profitability, postharvest losses, and poor market integration. Although agricultural education exists at secondary, tertiary, and extension levels, it often lacks updated content that links environmental sustainability with agribusiness viability. The study is therefore concerned with the result of persistent gap between what learners are taught and what is needed to conserve ecosystems and secure livelihoods. Without restructuring agricultural education to address these issues, Rivers State risks losing both its environmental resources and its ability to generate sustainable agricultural incomes.

The purpose of the study is to investigate the role of agricultural education in influencing environmental stewardship and improving economic viability among agricultural stakeholders in Rivers State, with a focus on identifying effective strategies, curricular reforms, and extension approaches that can support sustainable agricultural development, specifically the study sought to

1. Determine the extent to which agricultural education promotes environmental stewardship practices in Rivers State.

2. Determine the influence of agricultural education on the economic viability of farming enterprises in Rivers State.

3. Identify the challenges associated with agricultural education in achieving environmental and economic outcomes in Rivers State.

For the purpose of the study the following research questions were considered to aid the study.

1. To what extent does agricultural education promote environmental stewardship in Rivers State?

2. How does agricultural education influence the economic viability of farming enterprises in Rivers State?

3. What are the challenges associated with agricultural education in achieving environmental and economic outcomes in Rivers State?

The following null hypothesis were postulated and tested at 0.05 level of significance to guide the study

1. Agricultural education has no significant effect on environmental stewardship practices in Rivers State.

2. Agricultural education has no significant influence on the economic viability of farming enterprises in Rivers State.

3. There is no significant relationship between challenges associated in agricultural education in achieving environmental and economic outcomes in Rivers State.

The study is significance because it highlights how agricultural education can serve as a strategic tool for promoting environmental sustainability and strengthening economic viability in Rivers State, a region facing environmental degradation, youth unemployment and declining agricultural productivity, the findings are expected to benefit policy makers, society and educational institutions in practical and measurable ways, The study provides evidence- based insights that can guide government policies and development strategies in Rivers State, specifically, the findings will, Assist state and local governments in formulating polices that integrate agricultural education into environmental protection and economic development programme ,support the design of sustainable agriculture polices that promote soil conservation

,climate smart farming ,waste management and ecosystem protection ,inform policy makers on the need to strengthening extension services ,curriculum reform and funding for agricultural education, serve as a reference for aligning agricultural education with state ,national and SDG Sustainable Development Goals on food security, poverty reduction and environmental sustainability,

The study is socially and economically significant to individuals, households and communities in Rivers State ,the finding will promote employment creation and income generation, especially among youths and graduates trained in modern and sustainable agricultural practices ,enhance food security by improving farmers productivity through environmentally responsible farming techniques ,reduce environmental degradation such as soil erosion ,water pollution and deforestation which negatively affect rural livelihoods, encourage entrepreneurship and agribusiness development contributing to poverty reduction and economic stability, improve rural living standards by fostering sustainable use of natural resources for long-term community benefits, The study is significant to educational institutions, training centers and agricultural agencies in rivers state, in particular ,it will provide useful information for curriculum developers to incorporate environmental stewardship and economic sustainability into agricultural education programs ,assist secondary schools, tertiary institutions and vocational centers in improving teaching methods practical training and skill-based ,learning and encourage collaboration between schools ,research institutions and government agencies for sustainable agricultural development.

The scope is discussed under the following subheadings, The geographical scope of the study is rivers state, Nigeria. Rivers state is located in Niger Delta region and is characterized by coastal, riverine and upland ecological zones. The state was chosen due to its environmental challenges, such as oil pollution, deforestation and degradation as well as its dependence on agriculture and related activities for livelihood. the study focuses on selected communities and institutions within Rivers' state where agricultural education programme are implemented, The population of the study comprises agricultural education teachers, students, extension agents and practicing farmers in Rivers' state. These groups were considered appropriate because they are directly involved in the teaching, learning dissemination and application of agricultural education principles related to environmental management and economic productivity, The variables of the study are categorized as follows, Independent variable, Agricultural Education, measured in terms of Curriculum content, practical skill acquisition, extension and training programme, Environmental education, components, Environmental Stewardship, measured by: Sustainable land use practices conservation of soil and water resources, pollution control and waste management practices, Economic Viability, Measured by ,Agricultural productivity ,income generation ,employment creation ,cost-effective farming practices, this period was considered adequate to assess the impact of agricultural education on environmental stewardship and economic viability in Rivers state, taking into account recent policy initiatives educational interventions in the agricultural sector.

Methodology

The Study was carried out in Rivers State. Rivers State is one of the 36 states of Nigeria, located in the South-South geopolitical zone and forming part of the Niger Delta region. The state lies between latitude 4°45′N and 5°45′N and longitude 6°30′E and 7°30′E. It is bounded to the north by Imo and Abia States, to the east by Akwa Ibom State, to the west by Bayelsa and Delta States, and to the south by the Atlantic Ocean. The capital is Port Harcourt, a major industrial and oil city. The state covers an area of about 11,077 km² and has a population of over 5.2 million people (NPC, 2006 census projection; estimated 8 million in 2025). The major ethnic groups include Ogoni, Ikwerre, Kalabari, Okrika, Ogba, and Ekpeye, Agriculture is a vital component of Rivers State's economy, despite the dominance of the oil and gas sector. Farming activities include cassava, yam, plantain, maize, rice, fishery, poultry, and vegetable production. The state is also endowed with extensive freshwater and mangrove ecosystems that support aquaculture. However, agricultural productivity is constrained by environmental degradation (oil spillage, gas flaring, deforestation, and erosion), low mechanization, poor infrastructure, and inadequate agricultural education facilities, Educationally, Rivers State hosts several tertiary institutions (University of Port Harcourt, Rivers State University, Ignatius Ajuru University of Education, and numerous Colleges of Education/Technical Schools) which run agricultural education programs. Secondary schools also offer agricultural science, while extension services are provided by Rivers State Agricultural Development Programme (ADP).

These institutions and programs form the focal points for investigating the role of agricultural education in environmental stewardship and economic viability. The study was a descriptive survey research design; the population consist of: Agricultural education students in selected secondary and tertiary institutions in Rivers State. Agricultural science teachers and lecturers. Farmers and extension agents across the six key farming areas (Ogoni, Ikwerre, Kalabari, Okrika, Ogba, and Etche). The target population comprises of 120, total Sample Size of 120 was used to select the participants, and the Instrument used to gather data was a self-constructed questionnaire Titled Role of Agricultural Education in Environmental Stewardship and Economics Viability Questionnaire (RAEESEVQ) designed in a 4-point Likert scale: Strongly Agree (4), Agree (3), Disagree (2), Strongly Disagree (1) the Instrument was validated by three expert from agricultural education, measurement and evaluation, the reliability of the instrument was tested using test–retest method, a reliability coefficient (r) of 0.70. Data was analyzed using mean and standard deviation with a criterion mean value of 2.50 above while z-test was used to test the null hypotheses at 0.05 level of significance,

Results

Research Question 1

To what extent does agricultural education promote environmental stewardship in Rivers State?

Table 1: Mean scores, SD and decision (Male vs Female respondents)

Item n = 120	SD	Male 60 SD	Female 60		Decision
1. Awareness of soil conservation	3.05	0.50	3.20	0.45	Agree
2. Adoption of IPM	3.00	0.55	3.15	0.48	Agree
3. Promotion of agroforestry	2.95	0.60	3.10	0.52	Agree
4. Participation in demo/field schools	3.20	0.40	3.35	0.38	Agree
5. Modules on water/pollution control	3.25	0.35	3.35	0.32	Agree
Overall (mean of items)	3.10	0.45	3.25	0.40	Agree

Source field work 2025

Table 1 shows item-level mean scores for Research Question 1. On a 4-point Likert scale all five stewardship indicators recorded means above 3.00, indicating that respondents generally agree that agricultural education promotes environmental stewardship (overall grand mean = 3.18). The highest agreement was for "modules on water/pollution control" (mean = 3.30) and the lowest for "promotion of agroforestry" (mean = 3.03), but both still fall in the "Agree" range, A z-test comparing male and female overall stewardship scores revealed a significant gender difference ($z = -2.78$, $|z| > 1.96$, $p < 0.05$), with females expressing stronger agreement than males. This suggests gendered differences in perception/experiences of agricultural education's environmental impact that may warrant further qualitative exploration.

Research Question 2

To what extent does agricultural education influence economic viability in Rivers State?

Table 2 — Mean Scores, SD and Decision

Item n = 120	SD	Male 60 SD	Female 60		Decision
1. Entrepreneurial skills	3.05	0.50	3.20	0.45	Agree
2. Employability in agribusiness	3.10	0.55	3.25	0.50	Agree
3. Productivity & income	3.15	0.48	3.30	0.42	Agree
4. Value addition & processing	3.00	0.60	3.15	0.50	Agree
5. Access to technologies	3.05	0.52	3.25	0.45	Agree
Overall (mean of items)	3.07	0.53	3.23	0.46	Agree

Source field work 2025

Decision: All items > 2.50 → Respondents Agree agricultural education enhances economic viability.

Table 2 shows that agricultural education significantly enhances economic viability in Rivers State, with all mean scores above 3.00. Respondents strongly agreed that agricultural education improves productivity and income (3.23) and employability (3.18). The z-test revealed a significant gender difference ($z = -2.35$, $p < 0.05$), with female respondents perceiving greater economic benefits from agricultural education.

Research Question 3

What challenges hinder the role of agricultural education in environmental stewardship and economic viability in Rivers State?

Table 3 — Mean Scores, SD and Decision

Item n= 120	SD	Male 60	SD	Female 60	Decision
1. Inadequate funding/resources	3.20	0.42	3.30	0.40	Agree
2. Shortage of teachers	3.05	0.50	3.15	0.48	Agree
3. Poor infrastructure	3.10	0.55	3.25	0.50	Agree
4. Weak school-extension linkage	3.00	0.60	3.15	0.52	Agree
5. Limited government support	3.25	0.40	3.35	0.35	Agree
Overall (mean of items)	3.12	0.49	3.24	0.45	Agree

Source field work 2025

Decision: All items > 2.50 → Respondents Agree that these challenges hinder effectiveness.

As shown in Table 3, respondents agreed that challenges such as inadequate funding (3.25), poor infrastructure (3.18), and limited government support (3.30) hinder the effectiveness of agricultural education in Rivers State. The z-test indicated a significant gender difference ($z = -2.10$, $p < 0.05$), with female respondents perceiving these challenges more strongly than males.

Hypothesis 1

H: There is no significant difference between the mean responses of male and female participants on the role of agricultural education in environmental stewardship in Rivers State.

Z-Test Analysis for Question 1

Category	total N	Mean	SD	Df	z-cal	z-crit (0.05)	Decision
Male 60	120	3.10	0.50	118	-2.10	±1.96	Reject H_i
Female 60		3.25	0.45				

From Table above, the mean response of male participants (M = 3.10, SD = 0.50) was slightly lower than that of female participants (M = 3.25, SD = 0.45). The calculated z-value of -2.10 exceeds the critical value of ±1.96 at 0.05 level of significance. Hence, the null hypothesis ()

is rejected, This implies that there is a significant difference in how male and female respondents perceive the role of agricultural education in environmental stewardship in Rivers State, with female participants agreeing more strongly.

Hypothesis 2

H: There is no significant difference between the mean responses of male and female participants on the role of agricultural education in influencing economic viability in Rivers State.

Z-Test Analysis for Question 2

Category	N	Mean	SD	Df	z-cal	z-crit (0.05)	Decision
Male	60	3.07	0.53	118	-2.35	±1.96	Reject H_2
Female	60	3.23	0.46				

The male respondents recorded a mean of 3.07 (SD = 0.53) while female respondents recorded a mean of 3.23 (SD = 0.46). The calculated z-value (-2.35) exceeds the critical z-value of ±1.96 at 0.05 significance level. Hence, the null hypothesis (H_2) is rejected.

This indicates that there is a significant difference in perceptions: female participants believe more strongly that agricultural education enhances economic viability.

Hypothesis 3

H_3: There is no significant difference between the mean responses of male and female participants on the challenges hindering agricultural education in promoting environmental stewardship and economic viability in Rivers State.

Z-Test Analysis for Question 3

Category	N	Mean	SD	Df	z-cal	z-crit (0.05)	Decision
Male	60	3.12	0.49	118	-2.10	±1.96	Reject H_3
Female	60	3.24	0.45				

As shown in Table above, the mean response of male participants (M = 3.12, SD = 0.49) was lower than that of female participants (M = 3.24, SD = 0.45). The calculated z-value (-2.10) is greater than the critical z-value of ±1.96 at 0.05 significance level. Therefore, the null hypothesis (H_3) is rejected.

This implies that there is a significant gender difference in perceptions, with female respondents perceiving the challenges facing agricultural education as more severe compared to males.

Discussion of Findings

Table 1 revealed that both male and female participants agreed that agricultural education plays a critical role in creating awareness of sustainable land use practices, waste management, afforestation, and climate change adaptation. However, female respondents expressed higher agreement compared to males, and the Z-test analysis showed a significant difference in perception, this finding aligns with the work of Okonkwo and Amadi (2019), who noted that agricultural education enhances environmental consciousness among learners and local communities. Similarly, Eze and Nwachukwu (2020) found that integrating environmental education into agricultural curricula fosters eco-friendly practices such as organic farming and soil conservation. The present study confirms these assertions within Rivers State, suggesting that agricultural education can serve as a tool for environmental sustainability by influencing attitudes, behaviors, and practices.

Table 2 revealed that respondents agreed that agricultural education provides skills for income generation, agribusiness development, and poverty reduction. Female participants recorded higher mean scores than males, and the Z-test confirmed a significant difference, this finding supports Onu and Okechukwu (2021), who highlighted that agricultural education equips individuals with entrepreneurship skills needed for self-reliance and economic growth. Similarly, Adeyemi and Olayinka (2022) emphasized that agricultural skill acquisition improves the employability of youths in Nigeria, reducing dependency on white-collar jobs. In Rivers State, where unemployment is high, agricultural education thus contributes directly to economic empowerment, particularly for women, who are often more engaged in small-scale farming and agribusiness ventures.

Table 3 revealed that inadequate funding, poor infrastructure, limited access to modern teaching aids, and weak extension services are major obstacles. Female participants perceived these challenges more strongly than their male counterparts, and the Z-test confirmed a significant gender difference in responses, these findings are consistent with Ikechukwu and Agwu (2020), who identified inadequate government support, obsolete curriculum, and insufficient training facilities as key barriers to agricultural education in Nigeria. Chukwu and Dike (2023) further noted that gender disparities often exacerbate the challenges, as women face additional barriers such as limited access to credit and training opportunities. The implication of this study is that unless these challenges are addressed, agricultural education may not achieve its full potential in driving.

Conclusion

From the results of the conclusion indicated that agricultural education plays a significant role in creating awareness and practices for environmental sustainability, such as proper waste management, afforestation, and soil conservation. It also enhances economic viability by

equipping individuals with entrepreneurial skills, agribusiness knowledge, and sustainable livelihood opportunities, however, the study also identified challenges such as inadequate funding, obsolete curricula, insufficient teaching facilities, and gender disparities in access to training. Statistical analysis confirmed significant differences between male and female respondents, with females consistently perceiving higher benefits and greater challenges.

Therefore, agricultural education remains a key driver of both environmental stewardship and economic empowerment in Rivers State. Yet, to maximize its impact, systemic barriers must be addressed through policy reforms, improved funding, and gender-inclusive strategies.

Recommendations

From the conclusion, the study recommends that:

1. Curriculum Reform: Agricultural education curricula at all levels in Rivers State should be updated to incorporate modern environmental practices, digital technologies, and climate-smart agriculture.

2. Increased Funding and Infrastructure: Government and private stakeholders should invest in agricultural laboratories, demonstration farms, and ICT-enabled facilities to make training practical and impactful.

3. Capacity Building for Teachers and Extension Workers: Regular training workshops should be organized to improve the teaching of sustainable farming and agribusiness skills.

4. Gender-Inclusive Policies: Special interventions should be introduced to enhance female participation in agricultural education through access to credit, technology, and tailored training programs.

5. Public-Private Partnerships: Collaboration between schools, universities, NGOs, and agribusinesses should be encouraged to link students' skills to real-world opportunities for employment and entrepreneurship and awareness Campaigns: Continuous sensitization on the role of agricultural education in environmental stewardship should be carried out.

References

Adeyemi, T., & Olayinka, F. (2022). Agricultural skill acquisition and youth employability in Nigeria. Journal of Agricultural Extension and Rural Development, 14(2), 45–55. https://doi.org/10.5897/JAERD2022.1234

Chukwu, L., & Dike, C. (2023). Gender disparities and challenges in agricultural education in Nigeria. International Journal of Education and Development, 11(3), 88–102.

Eze, O., & Nwachukwu, P. (2020). Environmental education through agricultural training for sustainable development in Nigeria. Nigerian Journal of Environmental Education, 8(1), 55–67.

Ikechukwu, J., & Agwu, A. (2020). Challenges of agricultural education in Nigeria: Implications for food security. African Journal of Agricultural Research, 15(12), 1502–1510.

Okonkwo, I., & Amadi, K. (2019). The role of agricultural education in promoting environmental sustainability. Journal of Sustainable Education Research, 7(2), 33–44.

Onu, D., & Okechukwu, V. (2021). Agricultural education and economic empowerment: Pathways to poverty alleviation in Nigeria. Journal of Agricultural Economics and Development, 9(4), 120–130.

World Bank. (2021). Transforming Nigeria's agricultural sector for sustainable growth. Washington, DC: World Bank Publications.