



**EFFECT OF AGRICULTURAL EDUCATION PROGRAMS ON SUSTAINABLE  
FARMING PRACTICES AMONG AGRICULTURAL SCIENCE TEACHERS IN  
SELECTED PUBLIC SCHOOLS IN OJO LGA, LAGOS NIGERIA**

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**ABSTRACT**

The study examined agricultural Education for sustainable farming practices among Students in Ojo Local Government Area, Lagos Nigeria. Data were collected from 100 randomly selected agricultural science teachers from 20 public secondary schools through self-administered questionnaires. Structured questionnaires were utilized for data collection, with the reliability of the instruments confirmed by Cronbach Alpha coefficients of 0.754 and 0.864. Among the 100 respondents, comprising 31 male and 69 female, the findings revealed that 35.7% of are fully involved in sustainable farming practices, while 26% frequently involve students in such practices. Regarding the barriers and challenges faced by educators, 22.3% reported a lack of access to up-to-date technological agricultural practices and field equipment, while 34.5% engage their students in sustainable agricultural practices. The study also found a significant difference at  $P < 0.05$  in the effectiveness of agricultural practices in promoting sustainable farming practices. Sustainable farming practices are not attainable without the involvement of Agricultural science education. Agricultural science education plays a crucial role in promoting sustainable farming practices by providing farmers with the knowledge, skills, and resources necessary to implement environmentally-friendly and economically viable farming techniques. The Study concludes that agricultural science education is an effective educational tool that promotes sustainable farming practices in Lagos Nigeria. These findings contribute to the body of knowledge on agricultural education and sustainability, providing insights for policymakers, educators, and development practitioners aiming to enhance agricultural sustainability in developing countries.

**Keywords:** Agriculture, Education, Farming, Practices and Sustainable

**INTRODUCTION**

Sustainable farming practices harmonize agricultural productivity with environmental stewardship, promoting resilience and biodiversity conservation for long-term food security." This practice, are farming practices and methods used by farmers that aim to protect the environment, maintain soil fertility, and ensure the long-term viability of agriculture. These practices focus on reducing the use of chemicals, conserving water resources, promoting biodiversity, and mitigating climate change impacts. According to a study by the Food and Agriculture Organization (FAO), (2016), sustainable farming practices can lead to increased crop yields, reduced input costs, and improved resilience to climate change, as no nation can survive let alone develop without the capacity to feed her populace (Odey *et al.*, 2017). These practices also have positive environmental impacts, such as reducing greenhouse gas emissions and preserving natural habitats. Sustainable farming practices are essential for ensuring the long-term sustainability of agriculture and protecting the environment. It manages agricultural systems in a way that maintains their long-term productivity and minimizes their negative impacts on the environment and society (Bello-Imam *et al.*, 2020). By adopting farming practices such as crop rotation, agroforestry, cover



cropping etc., farmers can improve soil health, conserve water resources, and promote biodiversity while increasing their overall productivity and profitability. Food and Agriculture Organization (FAO) (2018) defines Sustainable ecological farming practices as the management of agricultural resources, such as soil, water, plants, animals, and energy, to satisfy changing human needs while preserving the environment and improving resource availability and production efficiency for future generations. It is a science, art, and social movement to transform conventional agriculture into systems that are ecologically sound, economically viable, and socially just (Altieri, 2018), by maintaining the ecological, economic, and social health of food systems (Bala *et al.*, 2018). Nigeria, with its vast agricultural potential, faces the crucial challenge of balancing food security with environmental sustainability.

Agricultural education as an integral part of vocational education can be described as education for sustainable development, but the status of agriculture education in Nigeria is grossly ineffective as a lot of vocational agricultural students and graduates are unable to accomplish simple practical farming activities given the required facilities (Eneji, 2021). This is where agricultural education emerges as a powerful tool for equipping farmers with the knowledge and skills necessary to adopt sustainable ecological farming practices, since educating farmers on responsible resource use reduces negative environmental impact (Awotoye *et al.*, 2022) and training of farmers in techniques like cover cropping, crop rotation, and composting empowers them to implement sustainable practices effectively. (Olugbire and Salau, 2021). Equipping farmers with business acumen enable them to market their sustainably produced goods effectively and access premium markets. (Shehu and Adi, 2021), while fostering collaboration and knowledge sharing among farmers through education builds a community-driven approach to sustainable agriculture (Ajayi *et al.*, 2018). These participatory programs provide practical training on sustainable techniques directly in farmers' fields, leading to significant yield increase. It is against this background that this study examined the role of agricultural education in promoting sustainable farming practices in Nigeria. Specifically, this study seeks to: examine the current effect of agricultural education on promoting sustainable farming practices in Nigeria; Identify the challenges faced by agricultural educators and farmers in implementing sustainable farming practices and describe the effectiveness of current agricultural education programs in promoting sustainable farming practices.

## **MATERIALS AND METHODS**

The study employed a descriptive survey design to investigate the role of agricultural education in promoting sustainable farming practices in Lagos State, Nigeria. Data were collected from 100 agricultural science teachers in 20 public secondary schools within Ojo Local Government Area to describe, predict, and interpret the relationship between these variables. Simple random sampling technique was used to select five (5) teachers from each school, without consideration of gender. A self-designed questionnaire titled "Agricultural Education and Sustainable Farming Practices Questionnaire" (AESFPQ) and a rating scale titled "Effectiveness of Agricultural Education Programs and Sustainable Farming Practices Questionnaire" (EAEPSFPQ) were employed to gather data. These instruments underwent review by experts in the field to ensure construct and content validity, resulting in enhancements to their quality. The reliability of the instruments was confirmed by Cronbach Alpha coefficients of 0.754 and 0.864. Data analysis was conducted using simple percentages and descriptive statistics, facilitated by IBM SPSS 26.



## RESULTS AND DISCUSSION

### Gender Distribution of Respondents

The result presented in Table 1 show that 31% of the respondents were male while 69% of the respondents were female. The result indicates that there are more female Agricultural science education teachers than the male teachers in the selected Public Secondary schools within the study area.

**Table 1: Gender distribution of respondents**

Sex	Frequency	Percent
Male	31	31.00
Female	69	69.00
<b>Total</b>	<b>100</b>	<b>100</b>

### Current Status of Agricultural Education in Nigeria and its Effect on Promoting Sustainable Farming Practices

The findings presented in Table 2 below revealed that the respondents agreed with all the 10 items in the questionnaire with mean rating higher than the Decision rule point of 2.50 as regards the current status of agricultural education in Nigeria and its impact on promoting sustainable farming practices. This analysis indicates a positive outlook regarding the current status of agricultural education in Nigeria and its potential for promoting sustainable farming practices. The majority of respondents in the study affirmed several key aspects: Furthermore, the data suggests that educators observe students adopting sustainable farming practices, believe in the significant role of agricultural education in promoting sustainability, and actively engage students in practical learning experiences to showcase sustainable agricultural practices. Many respondents are also familiar with government policies supporting agricultural education and are actively involved in promoting sustainable farming practices through education. These findings align with previous research, indicating that integrating sustainable agriculture education into school curricula can enhance environmental awareness and conservation practices among students. Additionally, continuous training and professional development for agricultural science teachers are deemed crucial for effectively imparting knowledge on sustainable farming practices. Research conducted in Ghana indicated that participation in agricultural extension programs positively affects farm productivity and household income, suggesting that similar programs in Nigeria could enhance the effectiveness of agricultural education in promoting sustainable practices. Research conducted in Ghana indicated that participation in agricultural extension programs positively affects farm productivity and household income, suggesting that similar programs in Nigeria could enhance the effectiveness of agricultural education in promoting sustainable practices. (Gideon *et al.*, 2018). In conclusion, the findings imply that agricultural education in Nigeria is conducive to promoting sustainable farming practices. However, continued support and investment from policymakers and stakeholders are essential to ensure the long-term impact of agricultural education on sustainability in the country. Therefore from the data obtained, it can be concluded that the current status is significant enough for effective sustainable farming practices and there is significant correlation between the current status of agricultural education in Nigeria and its impact on promoting sustainable farming practices in Lagos State.



**Table 2: Current status of agricultural education in Nigeria and its effect on promoting sustainable farming practices**

S/N	ITEM STATEMENT	SA	A	D	SD	Mean	Remarks
1.	Secondary education's curriculum is well equipped to teach sustainable farming practices (e.g., soil conservation, water management, crop rotation)	53	27	13	7	3.27	Agreed
2.	Practical activities were incorporated related to sustainable farming into my agricultural science lessons.	33	53	10	4	3.17	Agreed
3.	My students have access to adequate resources (e.g., textbooks, technology, field trips) to learn about sustainable farming practices	40	20	37	3	2.97	Agreed
4.	I am confident in my own ability to teach and communicate the principles and practices of sustainable farming.	50	33	14	3	3.30	Agreed
5.	I have received training and/or professional development opportunities related to sustainable farming practices.	30	33	20	17	2.77	Agreed
6.	I observe evidence that my students are adopting sustainable farming practices in their class practical or personal projects.	37	48	7	8	3.27	Agreed
7.	Agricultural education plays a significant role in promoting sustainable farming practices in Nigeria.	34	40	23	3	3.03	Agreed
8.	I frequently engage my students in practical learning experiences designed to showcase and promote sustainable agricultural practices (e.g., field projects, demonstrations).	23	25	40	12	2.60	Agreed
9.	I am familiar with government policies and programs that support agricultural education in Nigeria.	43	37	17	3	3.20	Agreed
10.	I am currently involved in agricultural education for sustainable farming practices in Nigeria.	63	18	17	15	3.57	Agreed
<b>Decision rule = 2.50</b>		$\bar{x}$ = mean					

### Barriers and Challenges Faced by Agricultural Educators and Farmers in Implementing Sustainable Farming Practices in Lagos State, Nigeria

The results presented in Table 3 below revealed that the respondents disagreed with two (2) of the ten (10) items on the barriers and challenges faced by agricultural educators and farmers in implementing sustainable farming practices in Lagos State. The remaining eight (8) items were agreed on have mean rating which ranges from 2.53 to 3.45, which are above the decision rule point of 2.50. This analysis reveals significant barriers and challenges encountered by agricultural educators and farmers in Lagos State, Nigeria, in implementing sustainable farming practices. Lack of Access to Updated Resources: is a major barrier identified and its shortage of updated textbooks, technology, and field equipment, hinders effective teaching and practical demonstrations of sustainable practices. This aligns with previous research emphasizing the importance of modern resources in promoting sustainable agriculture. Insufficient Training and Knowledge: Educators may face challenges in teaching specific techniques due to outdated knowledge or insufficient training in sustainable agriculture principles. Continuous professional development is crucial to keep educators abreast of the latest advancements in sustainable farming practices.

Limited Understanding of Benefits: The data highlights a limited understanding among educators and farmers regarding the specific techniques and long-term benefits of sustainable practices. This underscores the need for raising awareness and providing education on the advantages of sustainable farming methods. In conclusion, the findings underscore the pressing



need for increased support and resources to address the identified barriers and challenges faced by agricultural educators and farmers in Lagos State. This may involve enhancing access to modern technologies, providing training and education on sustainable agriculture principles, and improving connections with suppliers and distribution networks for sustainable inputs. Such efforts are essential to facilitate the successful implementation of sustainable farming practices and foster agricultural sustainability in the region. A study by Abdallah (2021) highlighted that integrating sustainable agricultural practices into education significantly improves environmental awareness and conservation practices among students in Ethiopia. This aligns with the findings that educators in Nigeria incorporate practical activities related to sustainable farming into their lessons and observe students adopting these practices. Therefore from the data obtained, it can be concluded that the barriers and challenges faced by agricultural educators and farmers in implementing sustainable farming practices in Lagos State are significant enough.

**Table 3: Barriers and challenges faced by agricultural educators and farmers in implementing sustainable farming practices in Lagos State, Nigeria**

S/N	ITEM STATEMENT	SA	A	D	SD	Mean	Remarks
1.	Lack of access to updated textbooks, technology, and field equipment can hinder effective teaching and practical demonstrations of sustainable practices.	16	20	33	30	2.23	Disagreed
2.	Educators may feel unprepared to teach specific techniques due to outdated knowledge or insufficient training in sustainable agriculture principles.	50	27	13	10	3.17	Agreed
3.	Rigid curriculum structures and limited flexibility might not prioritize integrating sustainable practices.	38	16	28	16	2.77	Agreed
4.	Engaging and equipping students to adopt sustainable practices outside of classrooms can be challenging.	60	27	11	1	3.45	Agreed
5.	Lack of strong connections with farmers and local communities may limit practical learning and understanding of local needs.	30	23	30	17	2.67	Agreed
6.	High initial investment costs of sustainable practices (e.g., organic fertilizers, cover crops) can be prohibitive for smallholder farmers.	26	21	27	26	2.53	Agreed
7.	Lack of reliable suppliers and distribution networks for sustainable inputs like organic fertilizers and biopesticides.	16	33	40	10	2.57	Agreed
8.	Limited understanding of specific techniques and long-term benefits of sustainable practices can hinder adoption.	20	27	27	26	2.40	Disagreed
9.	Difficulty accessing and navigating government support programs designed for sustainable agriculture.	50	27	13	10	2.80	Agreed
10.	Uncertainties about premium pricing for sustainably produced crops and access to suitable markets.	33	28	23	15	2.80	Agreed

**Decision rule: = 2.50**

$\bar{x} = \text{mea}$

### **Effectiveness of Current Agricultural Education Programs in Promoting Sustainable Farming Practices**

Table 4 reveal that there is a significance effectiveness of current agricultural education programs in promoting sustainable farming practices ( $\chi^2 = 207.186$ ,  $df = 3$ ;  $P < 0.05$ ). The findings presented in Table 4 revealed that all statements exhibit extremely low p-values denoting significant associations between the respective statements and respondents' perceptions or experiences. This implies that there exists a robust and noteworthy significance between





agricultural education initiatives and various aspects of sustainable farming practices as perceived or experienced by the respondents. The pivotal role of agricultural education in promoting sustainable farming practices is evidenced by the statistically significant associations delineated between the statements and respondents' perceptions or experiences. The results indicated that there is a significant effectiveness of current agricultural education programs in promoting sustainable farming practices. This is supported by the high Chi-square values for all the items related to sustainable farming practices in Table 4. Specifically, the items related to practical activities, training received, increase in adoption among students, benefits for students, addressing challenges and opportunities, and contributing to a more sustainable agricultural future all had high Chi-square values, indicating a strong relationship between current agricultural education programs and sustainable farming practices. This finding is in contrast to the initial hypothesis that there is no significant effectiveness of current agricultural education programs in promoting sustainable farming practices. The results suggest that agricultural education programs in Nigeria are indeed playing a crucial role in promoting sustainability in farming practices. This finding is consistent with previous research that has highlighted the importance of agricultural education in promoting sustainable farming practices (e.g., Swanson and Arnon, 2017). It is also in line with the Sustainable Development Goals (SDGs) set by the United Nations, which emphasize the importance of sustainable agriculture for achieving food security and environmental sustainability (United Nations, 2015).

**Table 4: Effectiveness of current agricultural education programs in promoting sustainable farming practices.**

Items	X <sup>2</sup>	Df	Asymp.Sig.
1. Agricultural science lessons feature practical activities related to sustainable practices (e.g., field experiments, compost making)	26.827	3	.000
2. I have received training in sustainable farming practices through agricultural education programs	28.853	3	.000
3. I have seen an increase in the adoption of sustainable farming practices among students who have received agricultural education	56.693	3	.000
4. I have noticed environmental impact of farming practices as a result of agricultural education	1.227	3	.000
5. There are tangible benefits for students who have implemented sustainable farming practices learned through agricultural education	35.773	3	.000
6. I believe agricultural education adequately addresses the challenges and opportunities of sustainable farming	57.013	3	.000
7. I am very confident that current agricultural education programmes are contributing to a more sustainable agricultural future in Nigeria	0.800	3	.000

**Chi-square calculated = 207.186      df = 3 @0.05 level of significance = 7.815**

Overall, the results of this study suggest that current agricultural education programs in Nigeria are effectively promoting sustainable farming practices and are contributing to a more sustainable agricultural future. Engaging students in practical learning experiences is vital for showcasing sustainable agricultural practices. Evidence from various studies supports the notion that hands-on activities and field projects enhance the learning and adoption of sustainable practices among students ( Ceaser *et al.*, 2018) This has important implications for the future of



agriculture in Nigeria and the potential for achieving sustainable development in the country. These findings accentuate the indispensable contribution of agricultural education programs towards facilitating a more sustainable agricultural landscape in Lagos state, Nigeria

## CONCLUSION AND RECOMMENDATIONS

The study concluded that agricultural education programs accentuate the indispensable contribution towards facilitating a more sustainable agricultural landscape in Lagos state, Nigeria. However, the following recommendations were made based on the findings of the study:

- i. There is need to integrate sustainable agriculture principles throughout the curriculum, from primary to tertiary levels. This can involve introducing dedicated courses on sustainable farming practices, incorporating relevant content into existing agricultural science curricula, and providing hands-on training opportunities.
- ii. There is a need to design programs that equip farmers and agricultural professionals with the necessary skills and knowledge to implement sustainable practices effectively.
- iii. There is urgent need to equip agricultural educators with the knowledge, skills, and pedagogical approaches necessary to effectively teach sustainable farming practices. This may involve training workshops, professional development programs, and access to up-to-date resources on sustainable agriculture.
- iv. Establishment of support systems for agricultural educators, including mentorship programs, access to expert networks, and opportunities to share best practices with colleagues is imperative
- v. There is need to encourage the exchange of knowledge and experiences between farmers through farmer-to-farmer networks, workshops, and demonstration farms. This can facilitate peer learning and the adaptation of successful sustainable practices to local contexts.
- vi. There is need to raise public awareness about the importance of sustainable agriculture through public campaigns, media engagement, and educational initiatives. This can help create a supportive environment for the adoption of sustainable practices

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