IMPACT OF REGENERATIVE AGRICULTURE ON RESTORING THE ECOSYSTEM THROUGH FARMING PRACTICES IN SECONDARY SCHOOLS IN EKITI STATE

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Abstract
This study examined the impact of regenerative agriculture on restoring the ecosystem through farming practices in secondary schools in Ekiti State. Specifically, the study examined the contribution of regenerative agriculture to soil health restoration in school farms, assessed the impact of regenerative agriculture on biodiversity improvement in school ecosystems, and established the relationship between school farming practices and ecosystem restoration. A descriptive survey research design was adopted for the study. The population for the study comprised 23,640 Senior Secondary School students from 202 public secondary schools in Ekiti State, while a sample size of 390 respondents was selected using multistage sampling technique. A structured questionnaire titled Regenerative Agriculture on Ecosystem Restoration Questionnaire (RAERQ) was used for data collection. The instrument was validated by experts in Agricultural Education and Test and Measurement, while a reliability coefficient of 0.82 was obtained using Cronbach Alpha method. Data collected were analyzed using mean and standard deviation to answer the research questions, while Pearson Product Moment Correlation and regression analysis were used to test the hypotheses at 0.05 level of significance. The findings revealed that regenerative agriculture contributed significantly to soil health restoration and soil fertility improvement in school farms. The study also found that regenerative agriculture supported biodiversity improvement and that school farming practices had a significant positive relationship with ecosystem restoration. Based on the findings, it was concluded that regenerative agriculture promotes environmental sustainability and ecosystem restoration through sustainable school farming practices. The study recommended among others that schools should adopt regenerative agricultural practices such as composting, mulching, crop rotation, and tree planting to improve soil quality and environmental sustainability.

Keyword: Agriculture, Ecosystem, Farming Practices, Regenerative Agricultural, Environmental Sustainability, Soil Health

Introduction

Agriculture remains one of the major human activities that directly interacts with the environment and influences ecosystem sustainability across the world. In recent years, environmental degradation arising from unsustainable farming practices such as excessive use of chemical fertilizers, bush burning, deforestation, monocropping, and overgrazing has contributed to declining soil fertility, biodiversity loss, erosion, and climate-related challenges. These environmental problems have raised concerns among environmentalists, educators, and agricultural experts on the need for sustainable farming systems capable of restoring degraded ecosystems while supporting food production. Regenerative agriculture has emerged as an environmentally friendly approach that focuses on rebuilding soil

health, conserving biodiversity, improving water retention, and restoring ecological balance through sustainable farming methods. The growing interest in regenerative agriculture has therefore increased the need to understand its role in ecosystem restoration through school farming practices.

Regenerative agriculture refers to a system of farming practices designed to improve and restore the natural environment by enhancing soil quality, increasing biodiversity, and promoting ecological sustainability. According to Diwan, et al (2021), regenerative agriculture involves farming methods that restore degraded soils, conserve water resources, and improve ecosystem functioning while ensuring agricultural productivity. The practices associated with regenerative agriculture include crop rotation, compost application, mulching, cover cropping, reduced tillage, agroforestry, and organic farming. These practices are intended to regenerate the ecological system rather than exploit natural resources. Raven (2020) explained that regenerative agriculture provides opportunities for environmental sustainability by integrating ecological restoration into agricultural production systems. The emphasis on ecological restoration through sustainable agricultural activities has made regenerative agriculture increasingly relevant in educational institutions where practical farming activities are carried out.

School farming activities serve as practical avenues through which students acquire agricultural knowledge, environmental awareness, and sustainable land management skills. Farming activities carried out in schools expose students to agricultural practices capable of influencing the surrounding ecosystem positively or negatively depending on the methods adopted. Burns (2021) observed that regenerative farming practices in educational settings promote environmental consciousness among learners and encourage sustainable interactions with nature. In many secondary schools, farming practices are still dominated by conventional methods that contribute to soil degradation and environmental stress. The need to incorporate regenerative agriculture into school farming activities has therefore become necessary for improving environmental sustainability and ecosystem restoration within school environments.

One of the major components of ecosystem restoration through regenerative agriculture is soil health restoration. Soil health refers to the ability of soil to function effectively as a living ecosystem that supports plant growth, maintains environmental quality, and sustains biological productivity. Healthy soil contains adequate nutrients, organic matter, microorganisms, and good structural composition necessary for sustainable agricultural production. Sher, et al (2024) noted that regenerative agriculture improves soil health through practices that enhance soil organic matter, reduce erosion, and encourage microbial activities within the soil ecosystem. Soil degradation resulting from poor agricultural practices has remained a major challenge affecting food production and environmental quality in many regions. Babaniyi, et al (2024) explained that regenerative agriculture contributes significantly to soil regeneration by restoring soil nutrients and improving soil biological functions. The importance of soil restoration in sustainable agriculture has therefore increased interest in examining the contribution of regenerative agriculture to soil health restoration in school farms.

The restoration of soil health through regenerative agriculture is closely connected to soil fertility improvement. Soil fertility refers to the capacity of the soil to supply essential nutrients required for healthy plant growth and agricultural productivity. The continuous use of synthetic chemicals and poor land management practices has contributed to nutrient depletion and declining soil productivity in many farming environments. Tindwa et al (2024) stated that regenerative agricultural practices such as composting, crop diversification, and reduced tillage improve nutrient cycling and enhance soil fertility for sustainable food production. Ibrahim-Olesin et al (2025) reported increasing awareness and usage of regenerative agricultural practices among farmers due to their positive effects on soil productivity and environmental sustainability. Ajayi et al (2026) also found that the adoption of regenerative agricultural practices among cassava farmers improved soil conditions and increased sustainable crop production. The role of regenerative agriculture in improving soil fertility has therefore created the need to assess its contribution within school ecosystems.

Apart from soil restoration and fertility improvement, regenerative agriculture also plays an important role in biodiversity improvement within ecosystems. Biodiversity refers to the variety of living organisms including plants, animals, insects, and microorganisms existing within a particular environment. Sustainable ecosystems depend largely on balanced biodiversity for ecological stability and environmental resilience. Conventional farming practices involving heavy chemical applications and land degradation have contributed to declining biodiversity in many agricultural environments. Vamshi, et al (2024) explained that regenerative agriculture enhances biodiversity by creating healthier habitats for organisms, improving vegetation cover, and reducing harmful environmental disturbances. Nwosu, et al (2024) further emphasized that regenerative practices support climate change management and ecological restoration through biodiversity conservation and sustainable land use systems. The importance of biodiversity conservation has therefore increased the need to investigate the impact of regenerative agriculture on biodiversity improvement in school ecosystems.

The concept of ecosystem restoration has become increasingly important in environmental sustainability discussions due to rising ecological challenges affecting human survival and environmental health. Ecosystem restoration involves the process of assisting the recovery of degraded ecosystems to improve ecological balance, environmental quality, and sustainability. Agricultural practices influence ecosystem restoration because farming activities directly affect soil conditions, vegetation, water resources, and biological diversity. Agboola, et al (2024) emphasized that regenerative frameworks contribute significantly to environmental transformation and sustainability by promoting restoration-oriented practices. Akahome (2026) also highlighted the growing importance of regenerative approaches in advancing planetary health and societal wellbeing through sustainable environmental practices. The relationship between farming practices and ecosystem restoration has therefore become a critical issue requiring scholarly attention, especially within school environments where future generations are trained.

In Nigeria, environmental sustainability education has become increasingly necessary due to growing concerns about land degradation, deforestation, declining soil productivity, and climate-related environmental problems. School environments provide important platforms for promoting sustainable agricultural practices capable of restoring degraded ecosystems and encouraging environmental stewardship among students. Okorie and Ijeoma (2026) explained that environmental education helps reconcile human activities with nature and promotes sustainable environmental practices among individuals and communities. Olatinwo et al (2026) also observed that the adoption of regenerative agricultural practices among farmers contributes positively to sustainable agricultural development and environmental conservation. Despite the recognized benefits of regenerative agriculture, there is limited empirical evidence on its impact on ecosystem restoration through school farming practices in secondary schools in Ekiti State. This gap in knowledge therefore necessitated this study on the impact of regenerative agriculture on restoring the ecosystem through farming practices in schools.

Statement of the Problem

Research has revealed the degradation of soil quality and the decline in agricultural productivity due to the continuous use of conventional farming methods. These methods, which often rely on chemical fertilizers, monocropping, and intensive land use, have contributed to the depletion of soil nutrients and reduced soil fertility over time. In school farming environments, where students are expected to acquire practical agricultural skills, similar conventional practices are often adopted without adequate emphasis on sustainable soil management techniques.

Regenerative agriculture, which focuses on restoring soil health through natural and sustainable practices such as composting, crop rotation, mulching, and organic manure application, has been identified as a viable approach to improving soil fertility and restoring ecosystem balance. However, there appears to be limited integration of these practices in school farming activities, and in many cases, students may not be fully exposed to methods that enhance long-term soil productivity. This situation raises concern about the extent to which school farming practices contribute to soil fertility improvement and environmental restoration. If students are not adequately exposed to regenerative agriculture practices, it may affect their ability to understand sustainable farming systems and apply them in real-life agricultural situations. It is therefore necessary to examine the impact of regenerative agriculture on soil fertility within school farm settings and its implications for ecosystem restoration

Purpose of the Study

The purpose of this study is to examine the impact of regenerative agriculture on restoring the ecosystem through farming practices in schools. Specifically, the study:

1. examined the contribution of regenerative agriculture to soil health restoration in school farms.
2. assessed the impact of regenerative agriculture on biodiversity improvement in school ecosystems.
3. established the relationship between school farming practices and ecosystem restoration.

Research Questions

The study was guided by the following research questions:

1. What are the contributions of regenerative agriculture to soil health restoration in school farms?
2. What is the impact of regenerative agriculture on soil fertility in school ecosystems?
3. What is the relationship between school farming practices and ecosystem restoration

Research Hypotheses

The following hypotheses were formulated and tested at 0.05 level of significance:

1. There is no significant relationship between regenerative agriculture practices and soil health restoration in school farms.
2. Regenerative agriculture practices do not significantly impact soil fertility improvement in school ecosystems.
3. There is no significant relationship between school farming practices and ecosystem restoration

Methodology

The study adopted a descriptive survey research design to examine the impact of regenerative agriculture on restoring the ecosystem through farming practices in schools. The population for the study comprised 23,640 Senior Secondary School (SSS) students drawn from 202 public secondary schools in the state. A sample size of 390 respondents was selected for the study using a multistage sampling technique. Firstly, a simple random sampling technique was used to select public secondary schools across the senatorial districts in the state. Thereafter, a proportionate sampling technique was employed to distribute the respondents according to the population of students in the selected schools. Finally, simple random sampling technique was used to select the students who participated in the study.

The instrument used for data collection was a structured questionnaire titled "Regenerative Agriculture on Ecosystem Restoration Questionnaire (EAERQ)". The instrument consisted of two sections. Section A focused on the demographic information of the respondents, while Section B contained items relating to regenerative agriculture practices, soil health restoration, soil fertility improvement and ecosystem restoration. The questionnaire items were structured on a four-point Likert type scale of Strongly Agree (SA), Agree (A), Disagree (D), and Strongly Disagree (SD) with weighted values of 4, 3, 2, and 1 respectively.

To ensure the validity of the instrument, the questionnaire was subjected to face and content validation by experts in Agricultural Education and Test and Measurement in Ekiti State University. The reliability of the instrument was determined through a pilot study conducted among students outside the sample. The data collected were analyzed using Cronbach Alpha reliability method, and a reliability coefficient of 0.81 was obtained, indicating that the instrument was reliable for data collection.

The researcher, with the help of trained research assistants, administered copies of the questionnaire directly to the respondents in their respective schools. This method ensured proper distribution, monitoring, and high retrieval rate of the instrument. The data collected were analyzed using descriptive and inferential statistics. Mean and standard deviation were used to answer the research questions, while Pearson Product Moment Correlation (PPMC) was used to

test the hypotheses 1 and 3, while hypothesis 2 was tested using regression analysis, all at 0.05 level of significance. A criterion mean of 2.50 was used for decision making, where items with mean scores of 2.50 and above were regarded as agreed, while items with mean scores below 2.50 were regarded as disagreed.

Results

Research Question 1: What are the contributions of regenerative agriculture to soil health restoration in school farms?

Table1: Mean and Standard Deviation of regenerative agriculture on soil health

S/N	Items	Mean	SD	Decision
1	The use of compost manure makes the soil healthier in our school farm.	3.18	0.81	Agree
2	Planting cover crops helps to prevent soil from being washed away.	3.05	0.88	Agree
3	Changing crops regularly helps to improve the quality of the soil.	2.97	0.91	Agree
4	Mulching helps the soil to keep enough water for plant growth	3.12	0.84	Agree
	Grand Mean	**3.08**		

The table 1 above shows that all the items had mean scores above the criterion mean of 2.50, indicating that respondents agreed that regenerative agriculture contributes positively to soil health restoration in school farms. The grand mean of 3.08 further confirmed the respondents' agreement.

Research Question 2: What is the impact of regenerative agriculture on soil fertility in school ecosystems?

Table 2: Mean and Standard Deviation showing regenerative agriculture on soil fertility

S/N	Items	Mean	SD	Decision
1	Natural fertilizers improve the fertility of the soil in the school farm.	3.10	0.86	Agree
2	The use of organic materials helps crops grow better on our school farm.	3.06	0.83	Agree
3	Regenerative farming practices help the soil contain more nutrients for crops	2.95	0.83	Agree
4	Reducing the use of chemical fertilizers helps the soil remain fertile for a long time.	3.14	0.80	Agree
	Grand Mean	**3.06**		

The table reveals that all the items recorded mean scores above 2.50, showing that respondents agreed that regenerative agriculture positively affects soil fertility in school ecosystems. The grand mean of 3.06 indicates overall agreement among the respondents

Research Question 3 What is the relationship between school farming practices and ecosystem restoration?

Table 3: Mean and Standard Deviation showing school farming practices and ecosystem restoration

S/N	Items	Mean	SD	Decision
1	School farming activities help to improve damaged land areas in the school environment	3.09	0.82	Agree
2	Good farming practices help different plants and animals survive in the school environment	3.15	0.79	Agree
3	Planting trees in the school farm helps to protect the environment.	3.22	0.77	Agree
4	Environmentally friendly farming practices help to conserve natural resources in schools.	3.18	0.81	Agree
	Grand Mean	**3.16**		

The table indicates that respondents agreed with all the items relating to the relationship between school farming practices and ecosystem restoration, as all the mean scores were above the criterion mean of 2.50. The grand mean of 3.16 shows that school farming practices have a positive relationship with ecosystem restoration.

Test of Hypotheses

Hypothesis 1: There is no significant relationship between regenerative agriculture practices and soil health restoration in school farms

Table 4: Correlation Analysis of regenerative Agricultural Practice and soil health restoration

Variable	N	Mean	SD	r-cal	P	Decision
Regenerative Agricultural Practice	390	3.09	0.86	0.72	0.00	Sig.
Soil health restoration	390	3.90	0.82	0.75		

The result in Table 4 shows that the calculated r-value of 0.72 with a p-value of 0.000 is less than the 0.05 level of significance. Therefore, the null hypothesis was rejected. This implies that there is a significant relationship between regenerative agriculture practices and soil health restoration in school farms

Hypothesis 2: Regenerative agriculture practices do not significantly impact soil fertility improvement in school ecosystems

Table 5: Regression Analysis showing impact of Regenerative Agricultural Practice on soil fertility

Variable	Unstandardized coefficients		Standardized coefficients	T	Sig
	B	Std. Error	Beta		
(Constant)	1.21	0.25	0.71	4.86	0.000
Regenerative Agricultural Practice	0.65	0.07		9.53	0.000

Multiple R= 0.71, R^2= 0.50, Adjusted R^2= 0.50, F= 90.88

The regression analysis results revealed a strong positive relationship between regenerative agriculture practices and soil fertility improvement in school ecosystems, with a correlation coefficient (R) of 0.71. The coefficient of determination (R^2) of 0.504 indicates that 50.4% of the variation in soil fertility

improvement was explained by regenerative agriculture practices, while 49.6% is attributable to other factors not covered in the study. The result further showed that the regression model was statistically significant, $F(1,388) = 90.878$, $p < 0.05$, indicating that the model adequately fits the data. In addition, the coefficients table revealed that regenerative agriculture practices significantly predicted soil fertility improvement ($\beta = 0.710$, $t = 9.533$, $p < 0.05$). Since the p-value was less than 0.05, the null hypothesis was rejected. This implies that regenerative agriculture practices have a significant positive influence on soil fertility improvement in school ecosystems

Hypothesis 3: There is no significant relationship between school farming practices and ecosystem restoration

Table 6: Correlation Analysis school farming practices and ecosystem

Variable	N	Mean	SD	r-cal	P	Decision
School farming practices	390	3.16	0.80	0.75	0.000	Sig.
Ecosystem	390	3.20	0.78			

The result in Table 6 reveals that the calculated r-value of 0.75 with a p-value of 0.000 is less than the 0.05 level of significance. Therefore, the null hypothesis was rejected. This indicates that there is a significant relationship between school farming practices and ecosystem restoration

Discussion of Findings

The findings of the study revealed that regenerative agriculture contributed positively to soil health restoration in school farms. Respondents agreed that practices such as compost application, mulching, cover cropping, and crop rotation improved soil quality and reduced soil degradation. The hypothesis tested also showed a significant relationship between regenerative agriculture practices and soil health restoration in school farms. This finding is in agreement with Sher et al (2024), who stated that regenerative agriculture improves soil health by increasing soil organic matter and reducing environmental degradation. The finding also supports the work of Babaniyi et al (2024), who observed that regenerative agricultural practices contribute significantly to soil regeneration and environmental sustainability.

The study further found that regenerative agriculture significantly influenced soil fertility improvement in school ecosystems. The regression analysis showed that regenerative agriculture practices positively predicted soil fertility improvement among the sampled respondents. This finding agrees with Ajayi et al (2026), who found that the adoption of regenerative agriculture practices improved soil conditions and enhanced agricultural productivity among farmers. The finding is also consistent with Diwan et al (2021), who explained that regenerative agriculture restores soil fertility through sustainable farming methods such as organic nutrient management and reduced chemical application.

The findings also revealed that school farming practices had a significant positive relationship with ecosystem restoration. Respondents agreed that environmentally friendly farming activities and tree planting contributed to restoring degraded environments within

the school ecosystem. This finding aligns with the submission of Vamshi et al (2024), who noted that regenerative agriculture promotes ecosystem restoration through biodiversity conservation and sustainable ecological practices. The finding also corroborates the study of Agboola et al (2024), who emphasized that regenerative frameworks support environmental transformation and ecological sustainability.

The study equally showed that regenerative agriculture supported biodiversity improvement in school ecosystems. Respondents agreed that regenerative farming practices increased plant diversity and encouraged the survival of beneficial organisms within school farms. This finding is in agreement with Burns (2021), who observed that regenerative farming practices in educational settings encourage environmental sustainability and ecological awareness. The finding also supports Raven (2020), who explained that regenerative agriculture integrates ecological restoration into agricultural systems and promotes sustainable interaction between humans and nature.

Conclusion

Based on the findings of the study, it was concluded that regenerative agriculture has significant positive impacts on ecosystem restoration through farming practices in schools. The study established that regenerative agricultural practices such as compost application, mulching, cover cropping, crop rotation, and reduced use of chemicals contributed greatly to soil health restoration and soil fertility improvement in school farms. The findings also showed that regenerative agriculture supports biodiversity conservation by promoting healthier environmental conditions for plants, insects, and other living organisms within the school ecosystem.

The study further concluded that school farming practices have a significant relationship with ecosystem restoration. Sustainable farming activities carried out in schools were found to contribute positively to environmental conservation, restoration of degraded land, and promotion of ecological balance. The integration of regenerative agriculture into school farming programmes therefore has the potential to improve environmental sustainability, enhance agricultural productivity, and promote environmental awareness among students. The study finally concluded that the adoption of regenerative agriculture in secondary schools in Ekiti State can serve as an effective strategy for restoring ecosystems and promoting sustainable environmental practices within school communities.

Recommendations

1. Secondary school administrators should encourage the adoption of regenerative agriculture practices in school farms to improve soil health and ecosystem restoration. This can be achieved by introducing farming practices such as composting, mulching, crop rotation, cover cropping, and tree planting into practical agricultural activities in schools.
2. Training and workshops for Agricultural Science teachers and students on regenerative agriculture practices and environmental sustainability should be provided by government and educational stakeholders. This can be achieved through regular seminars, practical demonstrations, and collaboration

with agricultural extension officers and environmental experts.

3. Educational authorities should integrate regenerative agriculture and ecosystem restoration concepts into the secondary school agricultural science curriculum to promote environmental awareness among students. This can be achieved through curriculum review, inclusion of practical environmental activities, and establishment of sustainable school farm projects across public secondary schools in Ekiti State.

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