



Tropentag 2026

Towards multi-functional agro-ecosystems
promoting climate-resilient futures

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Science for
Sustainable
Agro-ecosystems

Farmers' Perception of Low-Cost Biochar Technology as a Nature-Based Solution for Improving Soil Health in Southwest Nigeria



Dr Ayotunde Kolawole
Ekiti State University, Nigeria



1. Background

- Soil degradation and declining soil fertility are major challenges to agricultural productivity in southwest Nigeria.
- Biochar, a carbon-rich product from organic waste, can improve soil health, enhance nutrient use efficiency and sequester carbon.
- Farmers' perception and acceptance are essential for the effective adoption of biochar as a nature-based solution.



2. Objectives

- 1 Determine farmers' level of awareness and knowledge of biochar technology.
- 2 Examine farmers' perception of the benefits of biochar for soil health and crop productivity.
- 3 Identify the factors influencing farmers' acceptance and use of low-cost biochar.
- 4 Provide recommendations for promoting biochar adoption among farmers in southwest Nigeria.



3. Methodology

- Study Area**
Southwest Nigeria (Oyo, Ogun, Osun, Ekiti and Ondo States)
- Target Group**
Smallholder farmers
- Sample Size**
400 farmers
- Data Collection**
Structured questionnaires, focus group discussions and key informant interviews
- Data Analysis**
Descriptive statistics, Likert scale, and regression analysis



4. Key Findings



Awareness

Most farmers have heard about biochar, but detailed knowledge is still limited.



Perceived Benefits

Farmers recognize improved soil fertility, better water retention, higher crop yield and reduced use of chemical fertilizer.



Constraints

High cost (even in low-cost forms), limited access, lack of training and market information.



Acceptance

Generally positive perception, with willingness to adopt if support is provided (training, subsidy and market linkages).



5. Implications

- ✓ Biochar can be a viable nature-based solution for soil health and climate resilience.
- ✓ Farmer education and capacity building are critical for adoption.
- ✓ Policies and incentives (e.g., subsidies, input support, extension services) are needed.
- ✓ Integration into climate-smart agriculture programs will enhance sustainable food systems.



6. Conclusions

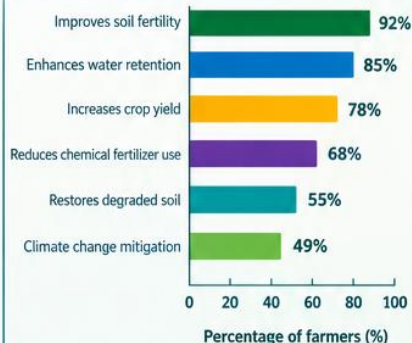
- ✓ Farmers in southwest Nigeria perceive low-cost biochar technology positively, and with appropriate support, it can be widely adopted to improve soil health, increase productivity and contribute to climate change mitigation.



7. Recommendations

- ✓ Promote farmer training and demonstration plots.
- ✓ Improve access to affordable biochar production technologies.
- ✓ Strengthen extension services and market linkages.
- ✓ Encourage policy support and incentives for biochar adoption.

Farmers' Perception of Biochar Benefits



Nature-Based
Solutions for
Sustainable Agriculture



Healthy Soils



Climate Resilience



Food Security



Rural Prosperity



Farmers' Voices. Healthier Soils.
A More Resilient Future.



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