IITA Solution Template

Use this template to document agricultural solutions. The parser will automatically extract data from the sections below and import it into the database.

CORE INFORMATION

Title: Climate Smart Package: Banana and Plantains
Countries: Nigeria, Ghana, Cameroon, Kenya, Uganda
Challenges: banana, plantains
Key Agroecology: tropic – warm subhumid, tropic – warm humid, subtropical – warm subhumid, subtropical – warm humid
Climate Potential: 7

EXECUTIVE SUMMARY

Executive Summary: Bananas and plantains are staple crops for household consumption and income for smallholder farmers in the humid and sub-humid tropical climate zones across Africa. Plantains make up 25% of critical dietary carbohydrates for populations across West and Central Africa, amounting to about 70 million people. Bananas and plantains are highly sought after exports in global trade, especially in European markets, representing a key source of income generation for both individual smallholder farmers and national GDP growth. However, harmful effects of climate change threaten continued economic growth from plantain and banana cultivation, have the potential to deteriorate biodiversity in the tropics, and threaten food security for millions of Africans. The Institute of Tropical Agriculture (IITA) has over 50 years of expertise in engineering climate-smart banana technologies and agronomy practices, with grassroots relationships to farmers, ensuring a sustainable solution for the humid and sub-humid tropical zones.

PROBLEM DEFINITION

Problem Title: Soil Degradation, Pests, and Diseases
Problem Bullets:
• Higher temperatures and drought conditions **are correlated with significantly lower banana yields.**
• The changing climate is increasing harmful diseases in banana and plantain plants, including **black sigatoka and fusarium wilt disease.**
• Erratic and unpredictable rainfalls deteriorate the soil, with flooding leading to **nutrient leaching** and long droughts leading to **low soil moisture.**
• Pests like the **banana weevil and nematodes** are additionally threatening livelihoods and food security across the tropics by declining banana and plantain crop yields.

SOLUTION DESCRIPTION

Solution Title: IITA's Climate Smart Package
Solution Bullets:
• **Advanced Seed Technologies**. Seed varieties that are resistant to disease and drought: The Kabana 6H/ NARITA 7 hybrid seed and NARITA 17. Leveraging in-vitro banana tissue culture propagation.
• **Agronomic Innovations.** Evidence-based intercropping technologies: intercropping banana and plantain plants with cassava, legumes, yams, and coffee increases yield and restores soil health.
• **Digital Tools for Implementation and Management.** Use the BXW App to monitor Banana Wilt Disease. Available on the Google Play store. Establish community-based seed multiplication systems for sustainable access
• **Our Team of Experts.** Experts like Rony Sweenen, who has been researching bananas in Africa for 50 years, to support your implementation.

RESOURCES & EVIDENCE

Technical Guides: Establishing Banana Crosses in the Field for Screening, Standard Operating Procedure for Hybridization of bananas, Coffee-Banana Intercropping: Implementation guidance for policymakers and investors
Digital Tools: IITA BXW app
Research Publications: Kiwangaazi (syn 'KABANA 6H') black sigatoka, nematode and banana weevil tolerant 'Matooke' hybrid banana released in Uganda, The performance of East African highland bananas released in farmers' fields and the need for their further improvement, The role of variety attributes in the uptake of new hybrid bananas among smallholder rural farmers in central Uganda**,** CGIAR banana research studies, Impact assessment papers, Breeding program documentation

Training Materials: Banana management practices to boost productivity; Training modules for farmers for growing tissue culture bananas, Banana and Plantain Farmers outreach session, Practical session for growing banana and plantain, Land Preparation and Planting Banana and Plantain

Impact:

No other Research for Development institution can pair climate-resilient seed breeding at the highest level with grassroots connection to smallholder farmers' livelihoods. The expected return on investment is 47.8% with yields of up to 60 tons per ha per year.

ROLE-SPECIFIC SUMMARY SENTENCE

Funder: The ROI is 4:1 within 3 years, scalable across West and East Africa, and attractive for climate finance mechanisms.
Policymaker: Our work supports national food security policies and agricultural transformation agendas.
Farmer: Obtain higher yields with reduced disease risk, improved income stability, and better market access.
Student: Explore research opportunities in banana genetics and climate adaptation in your career with us.
Extension: We have comprehensive training modules on disease management and climate-smart practices. Farmer demonstration plots and training materials are available, especially for propagation.
Researcher: Our known research gaps are in climate adaptation mechanisms and breeding program optimization. There are opportunities for collaborative studies on variety performance and understanding better the holistic impact of combining multiple of our interventions.
Development: We welcome partnership opportunities with farmer cooperatives and other groups and scaling through existing development networks for propagating viable varieties. Integration with nutrition and value chain programming could be most viable.
Business: Market opportunities exist for you in certified planting material business and banana value chain development. There's a proven demand for disease-resistant varieties.

ROLE-SPECIFIC CONTENT

Funder: IITA has been conducting banana research for tropical climates since 1973. IITA's specific regional focus for the African continent means experts design technologies specifically for the African lowland tropical forests. Strong potential for impact investment with proven track record of farmer adoption and income improvement.
Policymaker: IITA has been conducting banana research for tropical climates since 1973. IITA's specific regional focus for the African continent means experts design technologies specifically for the African lowland tropical forests. IITA is committed to produce scalable, effective technologies that farmers can easily implement. Contributes to climate adaptation strategies and smallholder farmer empowerment goals.
Farmer: Higher yields with reduced disease risk, improved income stability, and better market access. Simple adoption process with proven benefits for farming families.
Student: Research opportunities in banana genetics and climate adaptation. Hands-on agricultural training and exposure to innovative breeding programs.
Extension: Comprehensive training modules on disease management and climate-smart practices. Farmer demonstration plots and field day curricula available.
Researcher: IITA has been conducting banana research for tropical climates since 1973.
Development: Partnership opportunities with farmer cooperatives and scaling through existing development networks. Integration with nutrition and value chain programs.
Business: Market opportunities in certified planting material business and banana value chain development. Proven demand for disease-resistant varieties.

Contact Information

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Title image: /Users/sledermann/Development/iita_solutions/images of solutions/Banana/title.png
Problem image: /Users/sledermann/Development/iita_solutions/images of solutions/Banana/problem.jpg
Solution image: /Users/sledermann/Development/iita_solutions/images of solutions/Banana/solution.jpg

INSTRUCTIONS FOR USE

1. Replace the example content above with your solution data
2. Keep the section headers and field labels (e.g., 'Title:', 'Countries:') intact
3. Use comma-separated values for countries, challenges, and other list fields
4. Save the document and run: npm run parse-word filename.docx
5. Review the extracted data and confirm database import when prompted