Improving Cocoa Production Practices to Ensure Sustainable Supply that Meets Demand Growth

IITA’s Perspective

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1. Who we are
• IITA, an international non-profit R4D organization created in 1967 for the development of agricultural sector.

• Mission: to reduce producer and consumer risks, enhance crop quality and productivity, and generate wealth from agriculture.

• Our R4D activities reach ~85% of national systems in Africa.

• Our partners include national and international institutes, NGOs, academia, and the private sector.
2. Cocoa R4D at IITA
The Sustainable Tree Crops Project

- Conglomeration of international, regional, and national partners including the private sector with a vision to develop public-private partnership for cocoa sector in West and Central Africa (WCF, USDA, MARS)
  Countries: Cameroon, Côte d’Ivoire, Ghana, Liberia, and Nigeria
- Research on understanding the genetic diversity of cocoa germplasm, pest and disease management, rehabilitation and diversification of cocoa farms, issues on child labor, certification, occupational safety and health of farmers
- Farmers training through field schools, ICT, and other participatory approaches
The Sustainable Tree Crops Project

- Trained farmers got 15-40% higher cocoa yields, while requiring 10-20% less pesticides.
- Increase in cocoa income of households averaged between 23% and 55% as a result of production and marketing interventions.
- The video viewing club method piloted in Ghana won the 2008 CGIAR award for outstanding communications.
- Farmer field schools (FFS) approach declared by the National Cocoa Development Committee as the primary cocoa extension mechanism for Nigeria.
- Many national institutions have adopted STCP training modules, e.g., ANADER in Cote d’Ivoire.
Portal for data sharing (www.stcp.iita.org)
## IITA and cocoa

**Portal: allows direct online analysis of data**

### Yields per Country

<table>
<thead>
<tr>
<th>YEAR</th>
<th>YIELD AVERAGE / YEAR</th>
</tr>
</thead>
<tbody>
<tr>
<td>2004</td>
<td>265,7479</td>
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<tr>
<td>2005</td>
<td>207,4974</td>
</tr>
<tr>
<td>2007</td>
<td>297,4986</td>
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<tr>
<td>2008</td>
<td>551,1035</td>
</tr>
<tr>
<td>2009</td>
<td>384,4616</td>
</tr>
<tr>
<td>2010</td>
<td>405,3341</td>
</tr>
</tbody>
</table>

### Average Yield per Country/Year

![Graph showing average yield per country/year](image-url)
A multidisciplinary research team involved in cocoa R4D efforts

State-of-the-art labs for research on
- Molecular genomics & bioinformatics
- Molecular diagnostics; Germplasm health/Quarantine for clean seed systems
- Tissue culture/micropropagation
- Gene bank for germplasm conservation including cryopreservation

Online cocoa databases with real-time data collection

Training modules and curricula for scientists, extension staff, and farmers

Specialized communication and capacity development team
IITA and regional networks

- The African Cocoa Breeders’ Working Group (ACBWG)
4. Improving and sustaining cocoa production
Sustainable increase in cocoa yields

GEM Factor: Clean planting material and integrated management is key

High quality planting material of high yielding clones is fundamental to optimum plant performance

Environment (E)

Management (M)

Cocoa yield

Biotic stresses
- Pests
- Diseases

Abiotic stresses
- Planting material
- Habitat management (GAP, NRM, and postharvest)
Majority of the planting material is produced by rooted cuttings, grafting, and true seed. Demand outmatches the production rate (slow rate of propagation).

Way forward

- Establish a rapid and high ratio propagation system of elite clones and hybrids
- Harmonize planting material production and distribution practices within West and Central Africa
- Develop a safe system for exchange of rooted stocks in the region to meet the planting material demand and exchange of high-yielding and elite clones
R4D needs to overcome challenges

- Rehabilitate ageing plantations: use of improved true-to-type planting materials with resistance and high-yielding ability under different climatic conditions
- Establish a pipeline of varieties to combat threats of climate change
- Widely promote pest and disease control measures
- Address the shortage of quality planting materials and develop capacity for sustainable production and distribution
- Devise effective strategies for input delivery mechanisms
- Understand synergies/trade-offs in cocoa systems
- Use more innovative and scalable extension approaches/technologies such as use of smart phones and community knowledge brokers
- Understand the roles of interrelation of life stage, gender, inheritance systems, and land tenure in the cocoa investment decision
- Characterize and document information/knowledge
5. The Humidtropics –
A CGIAR Research Program led by IITA

A new platform for cocoa research and development
Humidtropics: 15-year targets

- Increase staple food yields by 60%
- Increase average farm income by 50%
- Lift 25% of poor households above the poverty line
- Reduce the number of malnourished children by 30%
- Nutrient depletion on 40% of farms reversed to sustainable nutrient flow
6. Conclusion
IITA: A regional hub for cocoa R4D

• Produce large-scale true-to-type clean planting materials of elite clones through tissue culture and micropropagation/Somatic embryogenesis
• Maintain and conserve true-to-type, pathogen-tested plant materials in vitro and in situ for short, medium, and long-term needs
• Multidisciplinary research team and facilities can significantly provide technology and technical backstopping for cocoa sustainability in West and Central Africa
• Training platform for tissue culture and micropropagation; plant health; soil and nutrients; socioeconomics; GIS applications; etc.
• Regional capacity and facilities in appropriate agroecologies to support various activities
Thank you/Merci