

# Crop Biotechnology in Africa

## *Progress, Challenges and Opportunities for the Seed Sector*

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**The Special Interest Group on Field Crops (SIGFC) - Expanding Access to Market  
and Investment in Seed Business of Field Crops in Africa'**

***AFSTA Congress – March 1-3, Nairobi, KENYA***



# Overview of Presentation



- **About ISAAA**
- **Global Adoption of Biotech Crops (1996-2014)**
- **Biotech Crops - Progress in Africa**
- **Challenges and Opportunities for the Seed Sector**

# ISAAA---[www.isaaa.org](http://www.isaaa.org)

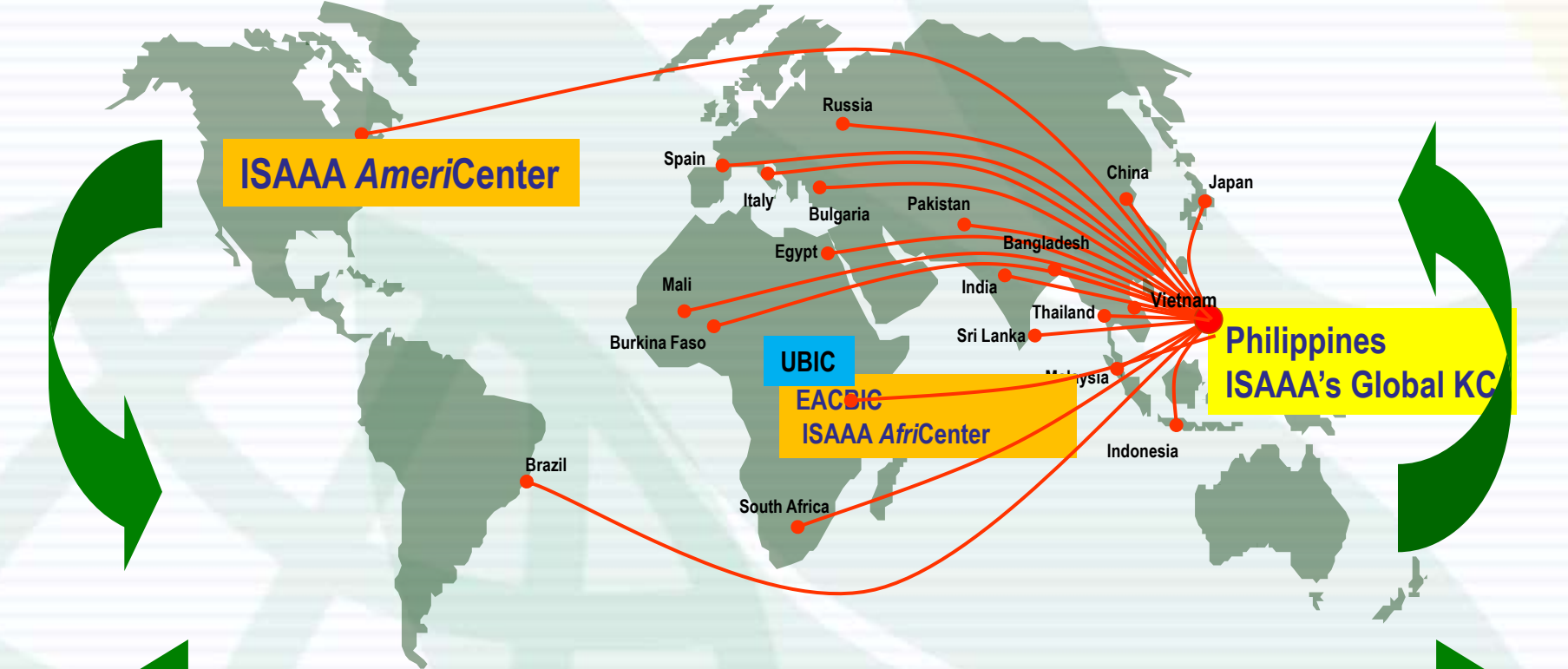
INTERNATIONAL SERVICE  
FOR THE ACQUISITION  
OF AGRICULTURAL BIOTECH  
APPLICATIONS



- **A Not-for-Profit Charity, co-sponsored by public and private sector organizations**
- **ISAAA is a Pro-Choice Organization**
- **Shares knowledge on crop biotechnology FREELY whilst respecting the rights of others to make their own decisions**
- **Ensure global society is well informed about the attributes and potentials of crop biotech applications in real time**

# ISAAA's Communications' and Global Knowledge Sharing Initiative

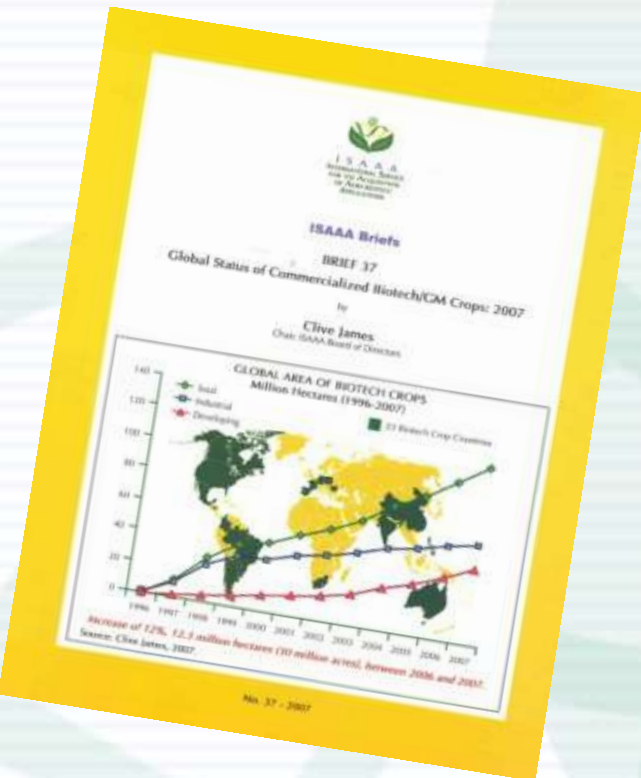
## Network of 26 Biotech Information Centers - BICs



**Dual Knowledge and Experience Sharing**

**Weekly Crop Biotech Updates**

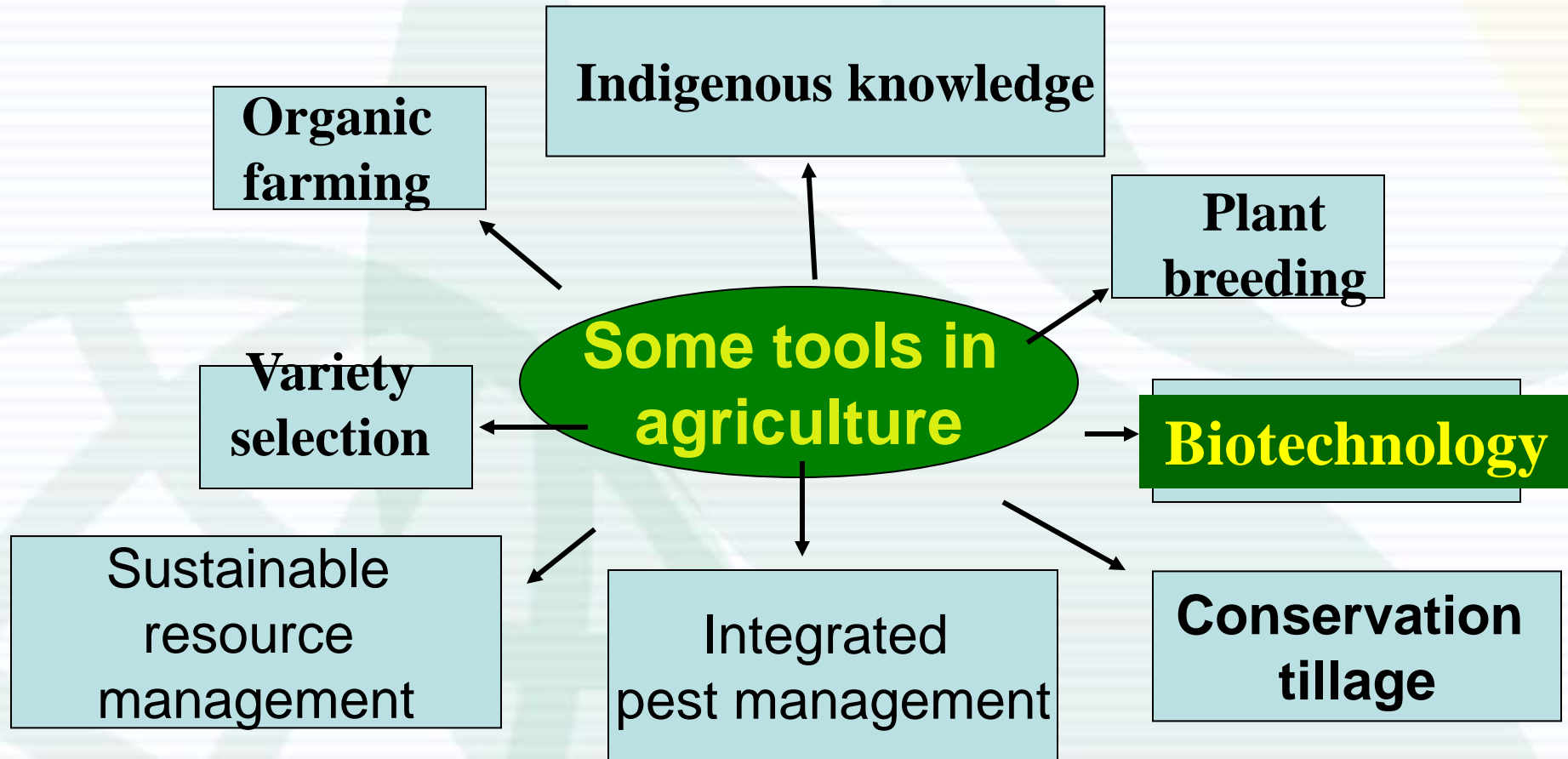
# ISAAA'S FLAGSHIP PUBLICATION



- ✓ Annual Global Brief since 1996 when first GM crops were officially launched
- ✓ Gives a global analysis on progress and trends with biotech crops
- ✓ Revised annually

# Improving Field Crops Production: *Different OPTIONS!*

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BIOTECHNOLOGY APPLICATIONS



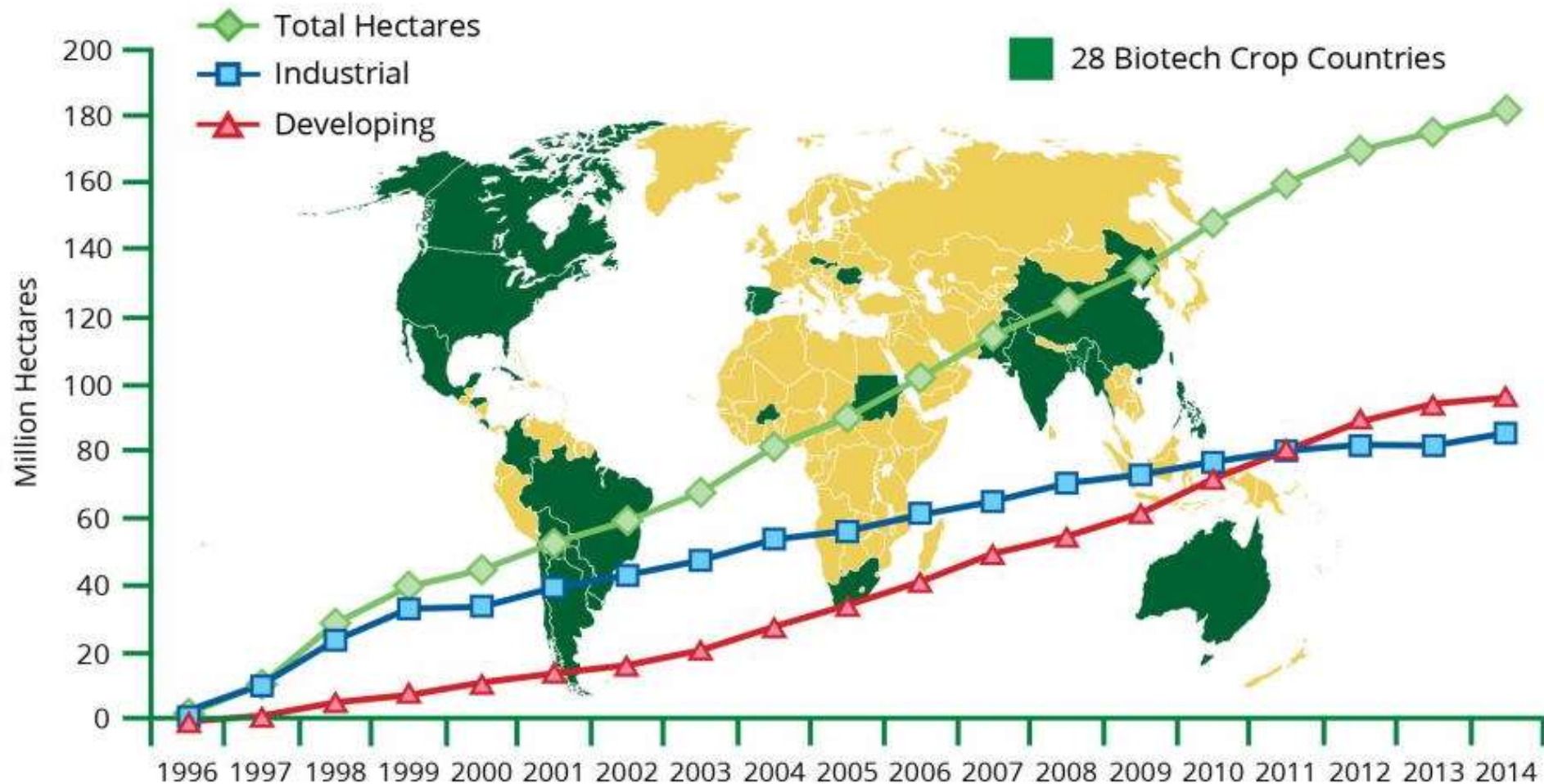
**Message 1: Biotechnology provides tools; NOT A PANACEA and will not replace traditional agriculture**

## **ADOPTION 1996-2014**

**More than a 100-fold increase  
from 1.7 to 181.5 M ha**

***Fastest adopted crop technology  
19th year of commercialization***

# GLOBAL AREA OF BIOTECH CROPS Million Hectares (1996-2014)



*A record 18 million farmers, in 28 countries, planted 181.5 million hectares (448 million acres) in 2014, a sustained increase of 3 to 4% or 6.3 million hectares (~16 million acres) over 2013.*

Source: Clive James, 2014.



## Message 2:

**In 2014, 20 out of 28 “crop biotech” countries were from developing countries. They grew 16 Million hectares out of 18 Million hectares planted on GM crops (majority: China, India, South America)**

# Principal Biotech/GM Crops

Soybeans: 82%

Cotton: 68%

Maize: 30%



Addressing:  
Specific insects: bollworms rootworms,  
stalk borers  
Weeds: Herbicide tolerance  
Stacks: Combined for insect resistance  
and herbicide tolerance



Canola: 25%

# Other Commercial GM crops

- Sugar beet
- Alfalfa
- Squash
- Pawpaw
- Sweet pepper
- Tomato
- Eggplant
- Poplar trees

**12**  
**commercial**  
**GM crops in**  
**total globally**

# Global Impact of Biotech Crops

## 19 years 1996 - 2014

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OF AGRIBIOTECH  
APPLICATIONS



Rigorous 2014 meta-analysis by **European group** of 147 data sets confirm that **on average, benefits are:**

- **22%** increase in yield
- **37%** decrease in pesticide use
- **68%** increase in net profits for farmers

**Message 3: Yield and profit gains higher in developing countries than in developed countries**

Source: Klümper W, Qaim M (2014). A Meta-Analysis of the Impacts of Genetically Modified Crops. PLoS ONE 9(11): e111629. doi:10.1371/journal.pone.0111629

# Biotech Crops: Progress in Africa by 2014

**3**

**COUNTRIES**

- South Africa
- Burkina Faso
- Sudan

**3**

**CROPS**

- Maize
- Cotton
- Soybean

**3.3**

**MILLIONS  
HECTARES**

# Africa Status of Biotech Crops' planting 2014



10 countries with CFTs on 5 staples  
Kenya – Bt maize conditional approval; South Africa – limited release of Drought tolerant trait

## Biotech commercial ▲

South Africa - Maize, cotton, soybean

Burkina Faso – Cotton

Sudan - Cotton

## Pipeline Biotech crops CFTs

RSA – maize, potatoes, sugarcane,

Cameroon: cotton

Kenya – cassava, cotton, maize, sorghum, sweetpotato

Ghana- cotton, cowpea, rice

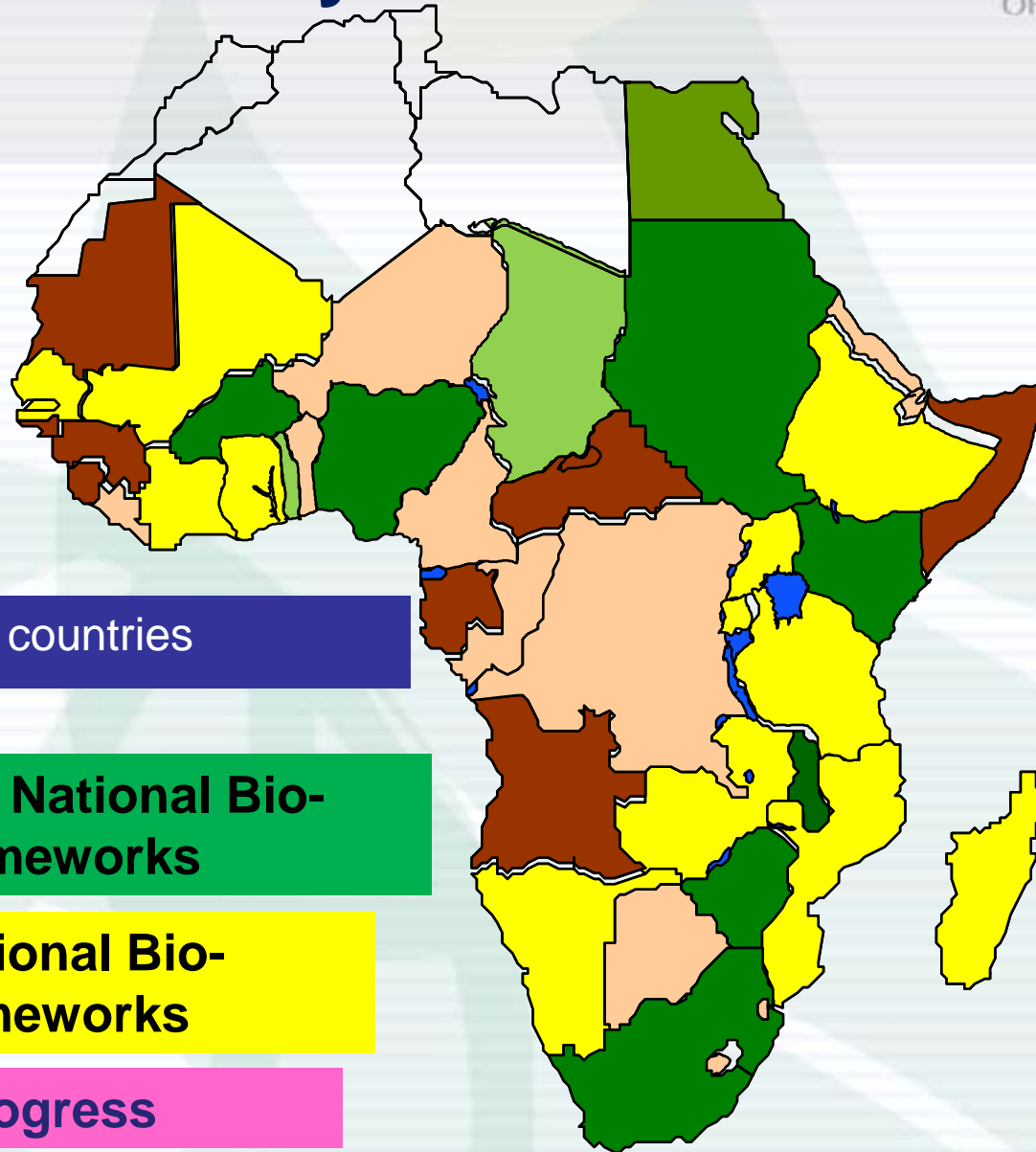
Egypt – cotton, wheat, potato, cucumber, melon

Uganda - banana, cotton, cassava, maize, rice


Nigeria - cowpea, cassava, sorghum


Malawi: cotton

# Status of Biosafety Frameworks



Four categories of countries

 **Functional National Biosafety Frameworks**

 **Interim National Biosafety Frameworks**

 **Work in progress**

 **No significant progress**

# Opportunities

## Agricultural transformation



- 1. More youthful farmers (25- 40 yrs)**
  - 2. Conservation agriculture (Zero tillage), reduced labour**
  - 3. Increased production in less area**
  - 4. Better health and cleaner environment**
- ✓ Vibrant Bioeconomy = BIG seed business!**



# Challenges related to delivery of biotech seed

- ❖ **Lack of capital and infrastructure to invest in technology**
- ❖ **Restrictive and/or poor regulatory enforcement:**
  - low awareness of biosafety/regulatory issues; IPR management
  - unlicensed seed merchants
  - trading in fake and poor quality seeds
- ❖ **Deeply entrenched perceptions**
  - Conflicting social-economic/Indigenous knowledge systems
  - Replanting/saving of seeds
  - Fear of Multinationals dominance and myths about GMOs

# Future of crop biotechnology in Africa – Interventions

- **Proactive policy** – sustained political goodwill
- **Efficient and cost-effective Biosafety regimes** – science-based, predictable, responsive
- **IPR regimes** that encourage local private sector
- **Sustained engagement at grassroots and farmer empowerment schemes**
- ✓ **Stewardship education for SEED SECTOR KEY!**

# From Debate to Dialogue...



*Help the public shed off  
“victim mentality”  
To become active players  
in the BIOECONOMY!*

*Thank you!*



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