

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

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FOR THE ACQUISITION
OF AGRIBIOTECH
APPLICATIONS



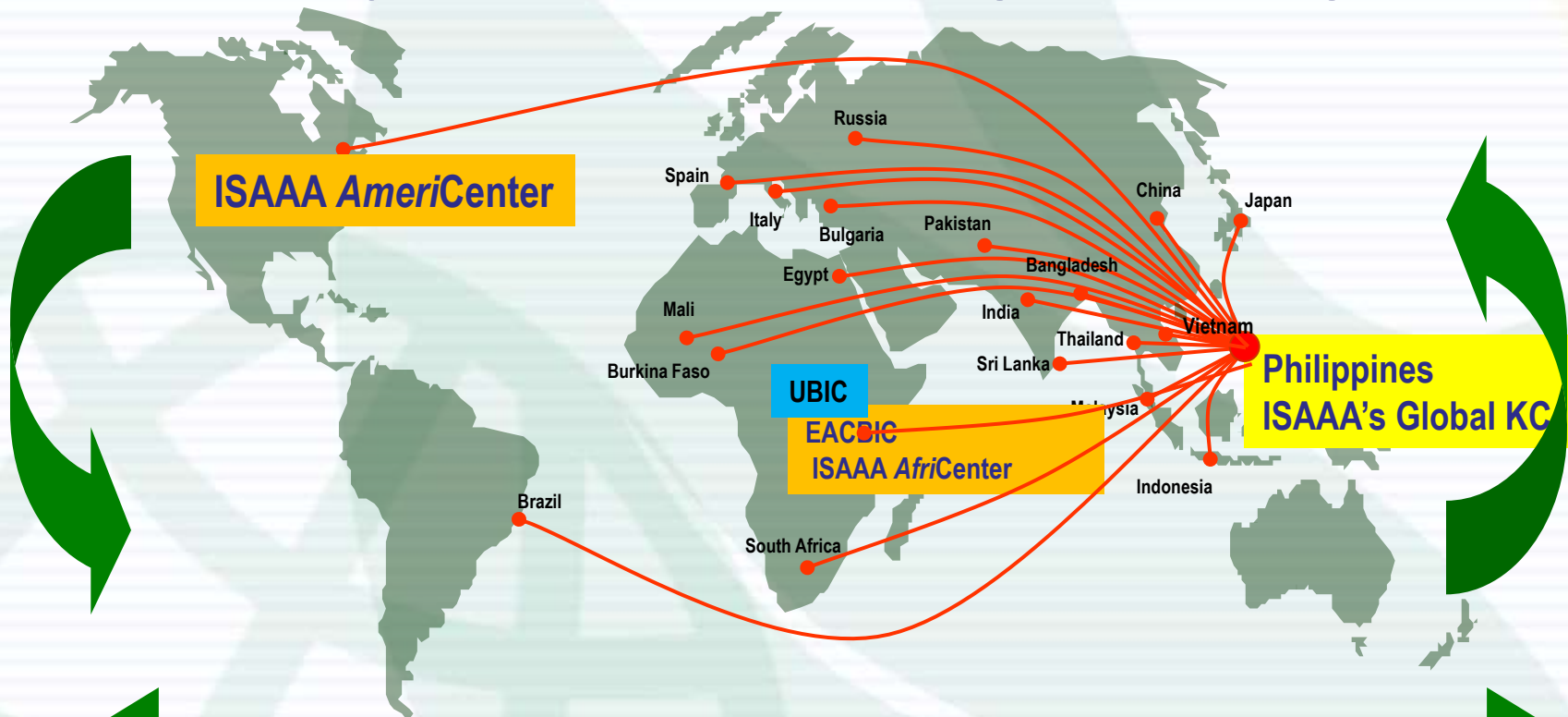
- **A Not-for-Profit Charity, co-sponsored by public and private sector organizations**
- **ISAAA is a Pro-Choice Organization**
- **Shares knowledge on crop biotechnology FREELY whilst respecting the rights of others to make their own decisions**
- **Ensure global society is well informed about the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

ISAAA's Communications' and Global Knowledge Sharing Initiative

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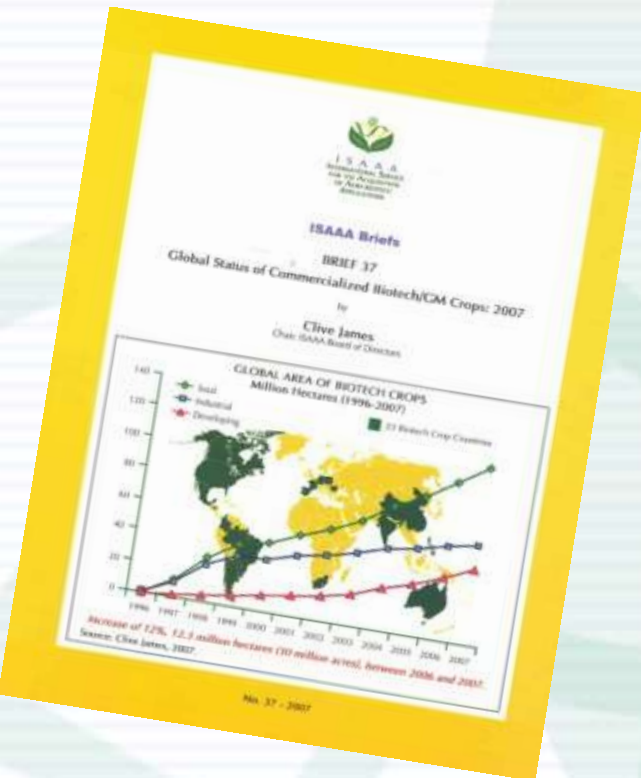
Network of 26 Biotech Information Centers - BICs



Dual Knowledge and Experience Sharing

Weekly Crop Biotech Updates

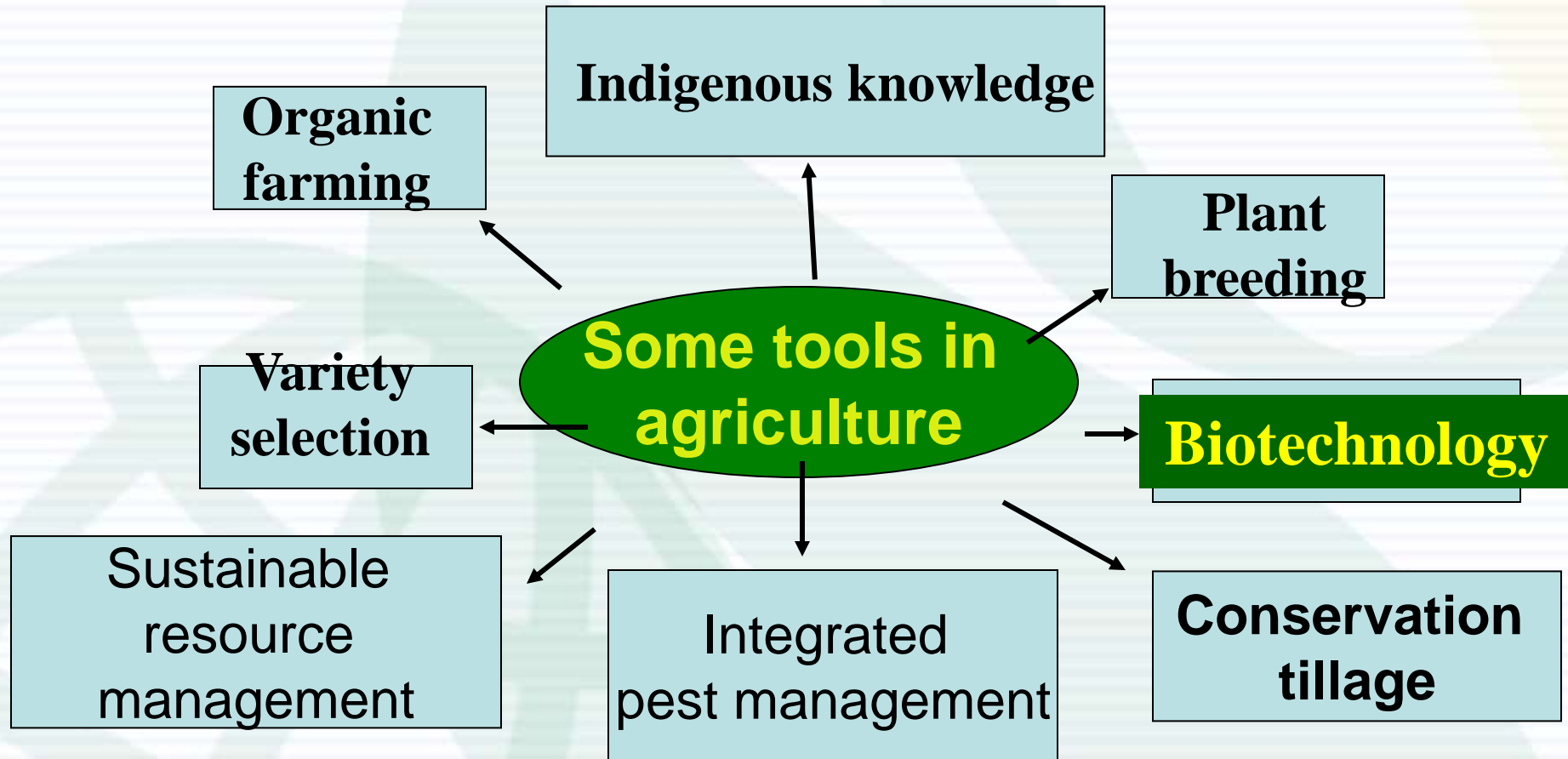
ISAAA'S FLAGSHIP PUBLICATION



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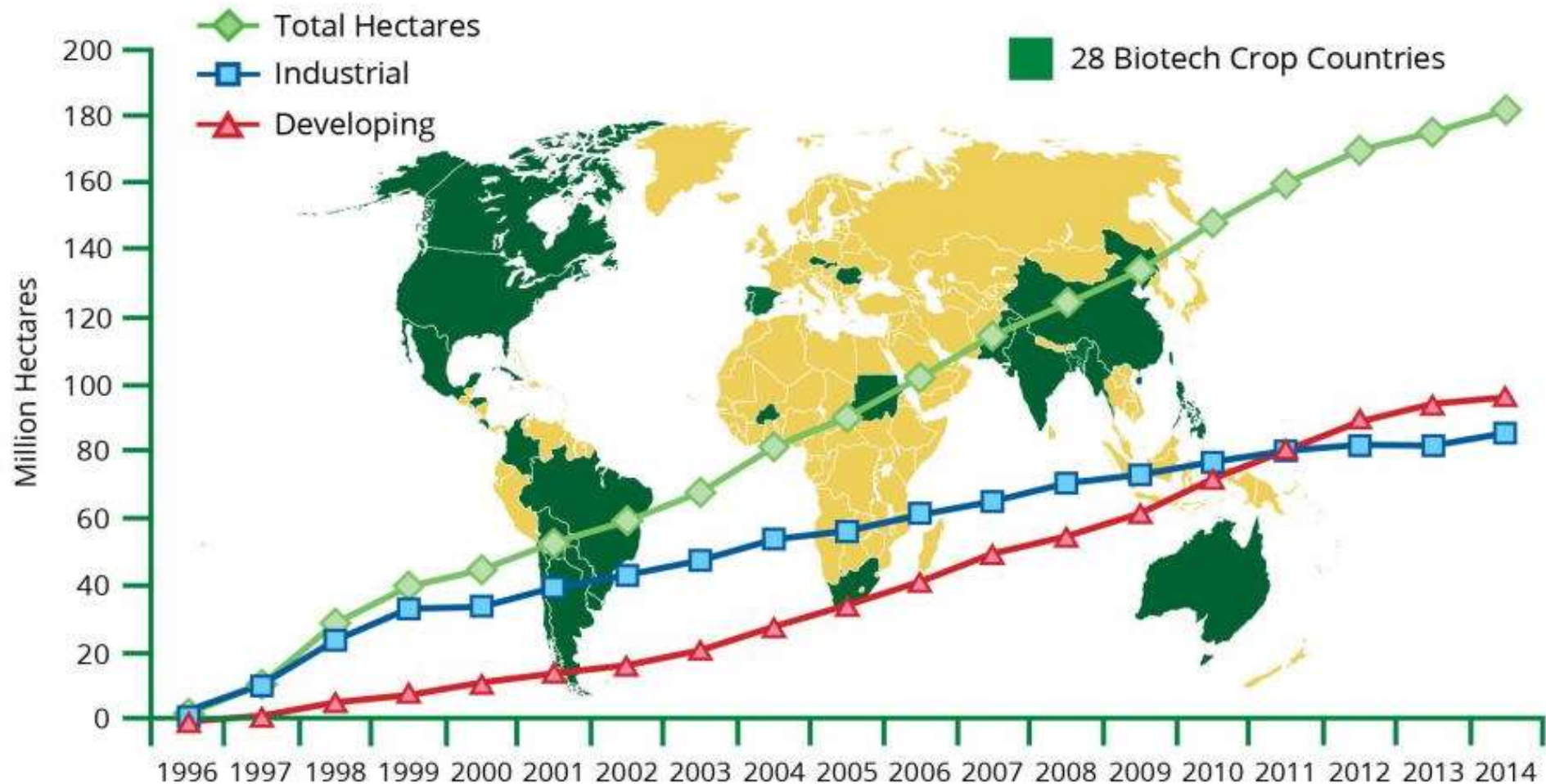
Message 1: Biotechnology provides tools; NOT A PANACEA and will not replace traditional agriculture

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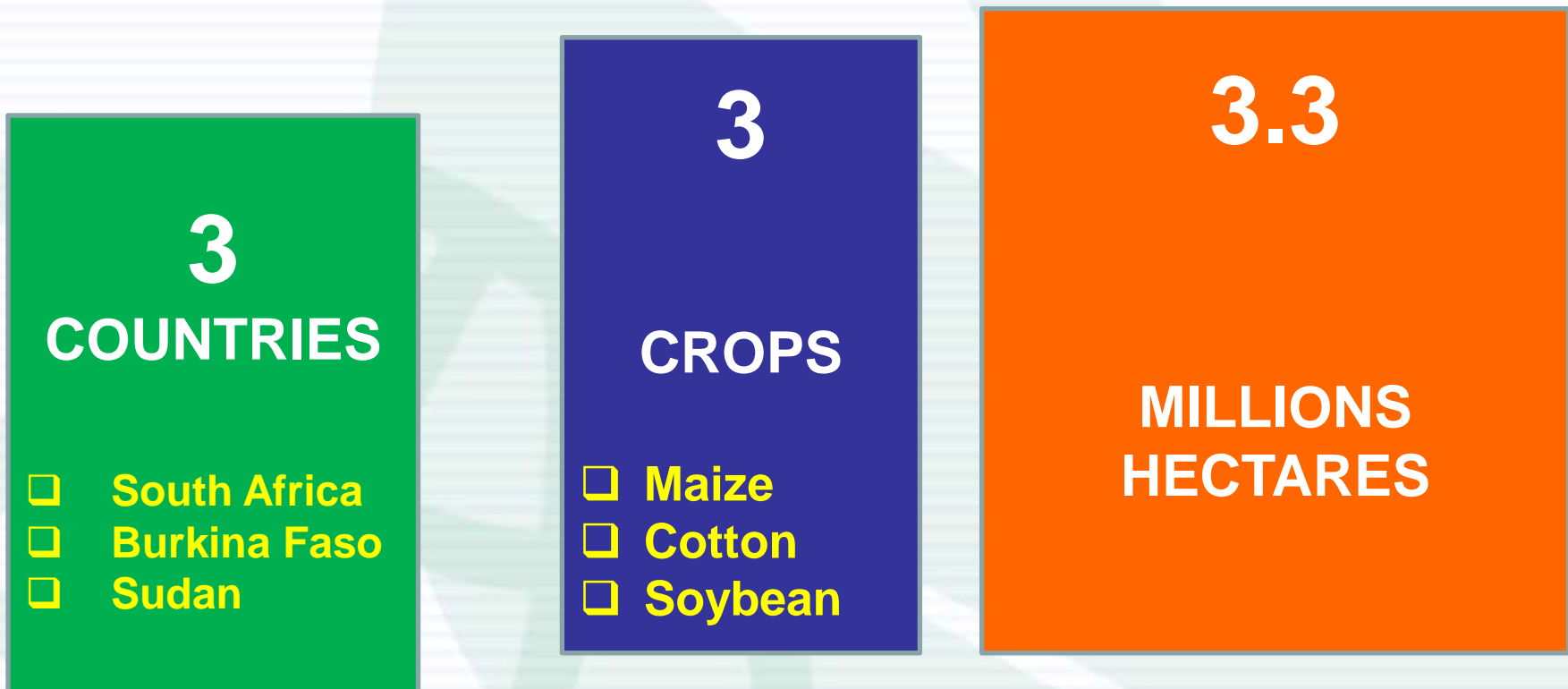
Rigorous 2014 meta-analysis by **European group** of 147 data sets confirm that **on average, benefits are:**

- **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



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

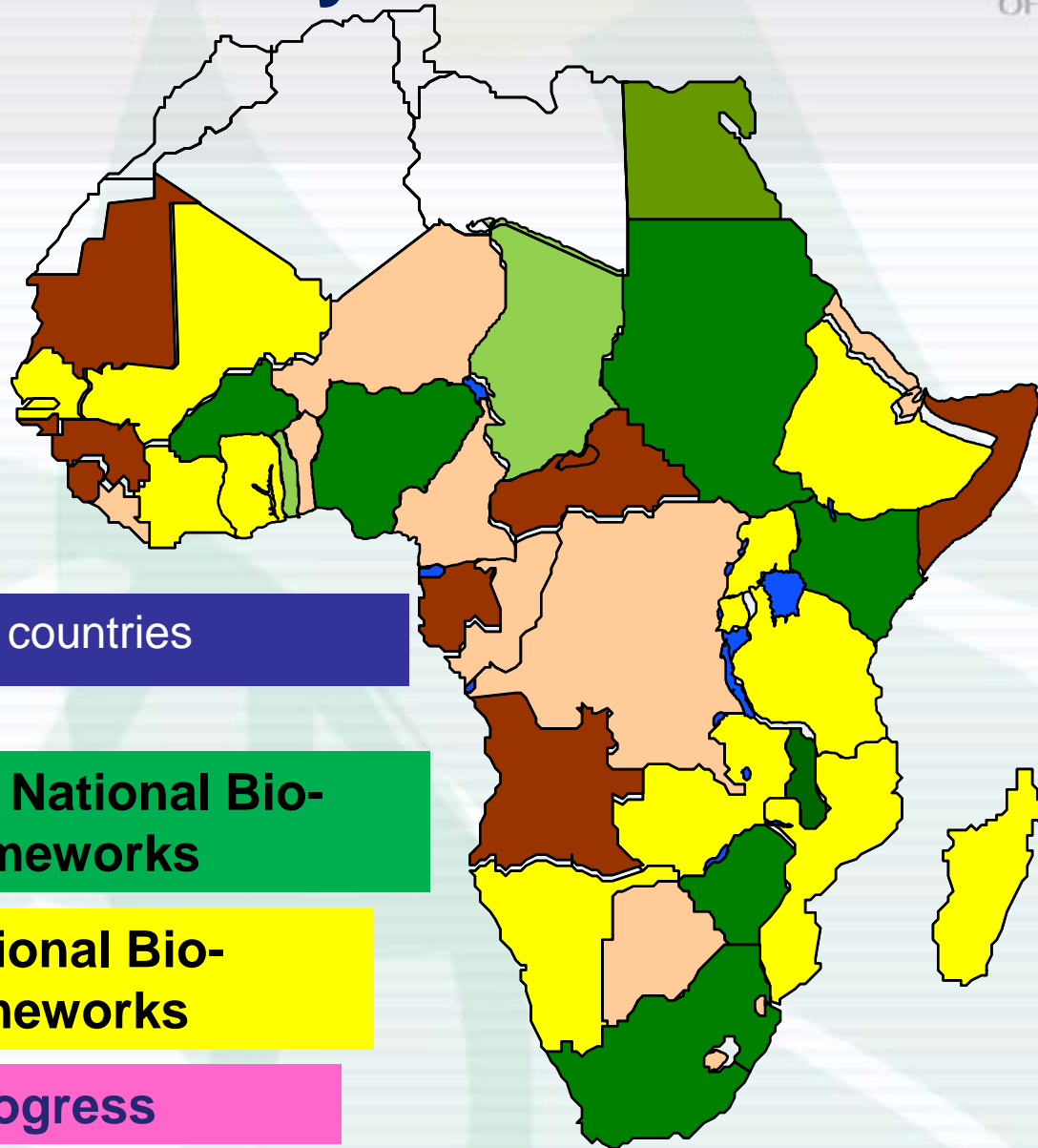
Egypt – cotton, wheat, potato, cucumber, melon

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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