Development, transfer and dissemination of agriculture related technologies

Frank Rijsberman, CEO CGIAR Consortium
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CGIAR: the world’s leading agricultural research partnership, working towards a food secure future.

A strategic partnership dedicated to advancing science to address the central development challenges of our time:

- **Reducing rural poverty**
- **Improving food security**
- **Improving nutrition and health**
- **Sustainably managing natural resources**

Its research is carried out by 15 International Agricultural Research Centers, working in close collaboration with hundreds of partners worldwide.
Connect needs, scientific excellence, impact
CGIAR’s global research Centers

Number of CGIAR Research Centers

15

CGIAR is a global research partnership for a food secure future
### CGIAR Research Programs (CRPs) portfolio

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<th>CRPs</th>
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<tr>
<td>Maize</td>
<td>CRP for Managing &amp; Sustaining Crop Collections</td>
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<td>Wheat</td>
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<td>Rice</td>
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<td>Roots, Tubers &amp; Bananas</td>
<td>Humid Tropics</td>
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<td>Dryland Cereals</td>
<td>Aquatic Agricultural Systems</td>
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<td>Grain Legumes</td>
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<td>Livestock and Fish</td>
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<td>Clamp Change, Agriculture and Food Security (CCAFS)</td>
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<td></td>
<td>Forests, Trees and Agroforestry (FTA)</td>
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<td>Water, Land and Ecosystems (WLE)</td>
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Agriculture Research for Development: the engine that drives technology development & adoption
Following a period of decline, public agricultural R&D spending increased globally by 22% from 2000-2008.

Developing countries drive public spending growth

Main drivers of $5.6 billion growth (2005 PPP $)

- $2.1 billion: China
- $0.6 billion: India
- $0.5 billion: United States
- +/- $0.2 billion each: Brazil, Argentina, Iran, Japan, Nigeria, Russia

Source: ASTI program led by IFPRI
Increased and Sustained Investment:
Doubling of CGIAR funding in five years (2008-2013) to $1 billion in 2013
But world’s poorest countries lag behind

More attention should be given to the poorest countries that have low, often declining or stagnating investment levels that are highly volatile.

Source: ASTI program led by IFPRI

Average volatility 2000–08 by income class

- High-income countries: 0.11
- Middle-income countries: 0.14
- Low-income countries: 0.21

Average volatility 2000–08 by region

- Latin America & Caribbean: 0.11
- Africa South of the Sahara: 0.21
- Asia-Pacific countries: 0.11

Average volatility is measured with volatility coefficients. The higher the number, the more volatile R&D spending is.
Most African countries fail to meet investment targets

Target (UN/NEPAD): Allocation of at least 1% of AgGDP to R&D

- On average, 0.51% of AgGDP in SSA was spent on public agricultural R&D in 2011
- SSA’s intensity ratio has declined since 2008 due to relatively stronger growth in AgGDP than in agricultural R&D spending

Source: ASTI program led by IFPRI
Spending growth: not everywhere and not fast enough

Target (UN expert group): 5% annual spending growth over the next decade

- 2000–2011 marked by spending decline or stagnation in about half of the 30 countries with time series data
- Since 2008, however, more and more countries have experienced positive growth.

Main drivers of region-wide growth in spending, 2000–2011
Conclusion on unfulfilled need

After period of decline, overall investment levels in agriculture R&D have increased globally – particularly since the food price spikes of 2007-8 and the sustained higher food ever since – particularly in middle income countries, the international system, bilateral donor support, and some low-income developing countries.

In Sub-Saharan Africa, however, national investments in AR4D is only about 0.5% of AgGDP – well behind the target of 1%.
Discovery phase
- New concept of product, service, or process

Proof of concept phase
- Testing of proof of concept in real world / controlled conditions (n=1000s)

Pilot phase
- Multi-location release/trials for smallholder’s benefit (n=100,000s)

Scaling up phase
- Release for scaling up & adoption in different locations (n= 1,000,000s)
CGIAR Centers developed high yielding varieties for staple cereals that were the engine of the Green Revolution.
Organizational structure of GRiSP

Genes

Varieties

Management

Value adding

Assessment Policy

Last-mile delivery
CGIAR: From technology push to Innovation Platforms

Conventional approach: research to farmer

Innovation Systems Approach: research inside
Why Innovation Platforms?

Push RWM interventions & technologies

→ Achieve short term quotas

Empower & engage actors in RWM strategies

→ Achieve sustainable landscapes & improved livelihoods

From Cullen and Ergano 2011
But how do innovation platforms change how things are done?

- Contributes to new knowledge
- Includes different sources of knowledge
- Facilitates learning
- Builds capacity to innovate
- Encourages local actors to own the process
- Addresses wide range of issues
- Improves communication between stakeholders

- Changes habits and practices
- Empowers actors
- Leads to joint action
- Involves wider institutions, policies and markets

From Cullen and Ergano 2011
Livestock Value Chain Analysis thru Innovation Platforms
Action Area Platforms: CGIAR Humid Tropics Farming System Research Program

Action Area meeting, Bukavu, May 2013
Sustainable Intensification of Agriculture

From The Montpellier Panel Report (2013)
Non-pipeline approach & impact

DRIVERS

POLICY Δ

PRACTICE Δ

ENGAGEMENT AND UPTAKE

BOUNDARY PARTNERS

RESEARCH CONTEXT Δ

TIME ➔

ATTRIBUTES Δ
Outputs, outcomes, timescale & impact

- **3-5 years** Immediate Development Outcomes
- **9-12 years** Intermediate Development Outcomes (IDO)
- **15-20 years** System Level Outcomes (SLO)

Area of control for the researcher

Area of influence for the researcher

Area of hope/concern for the researcher

1-3 years Research Outputs
Drought Tolerant Maize for Africa (DTMA)

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<tr>
<th>DTMA Project indicators</th>
<th>2013</th>
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<tbody>
<tr>
<td>Number of new varieties released (2007-2013)</td>
<td>140</td>
</tr>
<tr>
<td>Seed production in 2013 (new varieties)</td>
<td>30,000 t</td>
</tr>
<tr>
<td>Number of NARs - or companies - involved in seed production</td>
<td>13</td>
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<tr>
<td>Number of stakeholders adopting the new varieties: cooperatives; regional, national,</td>
<td>118</td>
</tr>
<tr>
<td>small &amp; medium enterprises (SMEs); international enterprises; large companies</td>
<td></td>
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<tr>
<td>Hectares planted with the new varieties</td>
<td>1,230,000 has</td>
</tr>
<tr>
<td>Number of households reached</td>
<td>2,900,000</td>
</tr>
<tr>
<td>Number of consumers benefiting these adoptions (Millions)</td>
<td>20 M</td>
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**Private sector linkages:** To strengthen the collaboration between the public and private sectors and to enhance the dissemination of hybrid rice technology, the **Hybrid Rice Development Consortium (HRDC)** was established at the International Rice Research Institute (IRRI) in 2008 with 38 public and private organizations. By Q1 2014, the HRDC has been expanded to 69 members.
Re-greening desolate landscapes and delivering results to millions of farmers – Faidherbia fertilizer tree & Maize multi-cropping systems (Mali, Malawi)

Source: CIFOR flickr collection.
Breeding data management

Source: https://www.integratedbreeding.net/
Data standards; making CGIAR data available and accessible

JANUARY 5, 2014 BY CONSORTIUM

News from the CGIAR Consortium: Open Access

Publicly available doesn’t always mean publicly accessible. CGIAR focus now on the way in which that data and related information is released. Photo: Neil Palmer/CIAT

Source: http://www.cgiar.org/consortium-news/
Agriculture trials & data management

http://www.agtrials.org/aboutagtrials

http://www.awhere.com
Extension 2.0: Adapting mobile ICT technologies to the needs of low income farmers
Conclusion on Technology Facilitation:

1. AR4D develops and facilitates adoption of clean and sustainable technologies to 500 million smallholder farmers, improving poverty, food-insecurity and malnutrition – and improving the sustainable management of the natural resource base.

2. The AR4D adoption model now makes extensive use of innovation platforms and value chain analysis – a participatory model that emphasizes demand.

3. The international AR4D partnership – the CGIAR – still works extensively with national AR4D partners, but also with private SME seed companies.

4. CGIAR manages its data and makes innovations available through Open Access, mobile technologies and technology platforms – to researchers, private sector, NGOs and to farmers.

5. **Agriculture, forestry, fisheries, landscapes and food systems are critical for achieving all the future SDGs focus areas** – a new technology facilitation mechanism should increase the focus on AR4D.
THANK YOU

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www.cgiar.org