Challenges and Examples - Research for Farmers

Jeff Ehlers,
"From the Ground Up”, Washington, DC, Nov. 13, 2014
Central Hypothesis – Ag Research Critical to Long-term Economic Development

- When smallholders are actively engaged in research process
  - Improved targeting of needs
  - Meaningful participation / local ownership
  - Higher probability of adoption – but no guarantee!

But it is still a tough business!
- African Farmers least subsidized on planet
- Little or no crop insurance, financing, price supports
- Very high input costs
- Risky climate, poor soils
- Unpredictable policy environment
- Ultimately linked to global markets and prices while operating at low scale with high aggregation costs, poor transport infrastructure
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<td>Food</td>
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<td>Oils and Meals</td>
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<tr>
<td>Coconut oil</td>
<td>$/mt</td>
<td>940.6</td>
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<td>955.3</td>
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<td>Soybean meal</td>
<td>$/mt</td>
<td>545.3</td>
<td>530.0</td>
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<td>Soybean oil</td>
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<td>538.4</td>
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<td>Barley</td>
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<td>Rice, Thailand, 5%</td>
<td>$/mt</td>
<td>505.9</td>
<td>430.0</td>
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<td>Wheat, US, HRW</td>
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<td>312.2</td>
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<td>Bananas, EU</td>
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<td>Meat, beef</td>
<td>$/kg</td>
<td>4.1</td>
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<td>4.1</td>
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<td>Meat, chicken</td>
<td>$/kg</td>
<td>2.3</td>
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<td>2.2</td>
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<td>Oranges</td>
<td>$/kg</td>
<td>1.0</td>
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<td>Shrimp, Mexico</td>
<td>$/kg</td>
<td>13.8</td>
<td>16.5</td>
<td>15.0</td>
<td>14.8</td>
<td>14.6</td>
<td>14.4</td>
<td>14.2</td>
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<td>13.8</td>
<td>13.6</td>
<td>13.4</td>
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<td>Sugar, World</td>
<td>$/kg</td>
<td>0.4</td>
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Productivity gaps can be closed!

African farmers achieve much less than half of the potential yields

Closing this productivity gap has agronomic solutions

- high quality seed of adapted varieties
- Locally tailored land preparation practices, cost-effective applications of fertilizers and pesticides and timely weeding

**Why are more farmers not adopting yield-boosting research results?**

- Poor farm economics-hard to adopt anything with low prices, and high input, aggregation and transport costs
- **Poorly conceived research and extension**
  - By outsiders with own agenda
  - No farmer consultation
Farmer participation in the development and execution phases of Ag R&D seems very rare!

You; few European initiatives - e.g. Joint Learning in Innovation Systems in African Ag (JOISSA)

More commonly - Inform "top-down" projects

- Farmers largely passive "recipients“ of interventions
- Many of our crop improvement investments are the top down types
  - May not address Farmers main concerns
  - Brought in ‘too late’ to set the research agenda
  - FPVS Trials
  - Systematic feedback loops are critical in adjusting research hypothesis as the project is executed.
- An Example – N2Africa Project
• Led by Wageningen University; main partners IITA, CIAT, ILRI and many national partners

• Funding 2009-2013 US$22M; 2014-2019 US$30M - >90% to partners

• Originally eight countries – DRC, Ghana, Kenya, Malawi, Mozambique, Rwanda, Nigeria, Zimbabwe

• Extension in 2012 to Ethiopia, Tanzania, Uganda
Increasing system productivity through improved $N_2$-fixation and agronomy

- Develop ‘best bet legume recommendations
  - agronomy and P fertilizer
  - Improved legume varieties
  - Select better rhizobium strains and inoculum
- Foster market linkages and create new enterprises to increase demand for legumes
N2Africa Feedback Loops

- Delivery and dissemination are the core
- Monitoring & evaluation with farmers provides the learning
- Research analyses and feeds back
Thousands of Farmer-managed trials in each country - ‘demonstration’ try-out

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<tr>
<th>Soybean, no inputs</th>
<th>Soybean, + P</th>
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<tr>
<td>Soybean, + inoculation</td>
<td>Soybean, + P + inoculation</td>
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P + I worked in some places but not all ("non-responsive environments")

Variable, no response at low yields
What is going on in the non-responsive soils? - fed back to researchers for solution.
Feedback loop-Missing nutrient experiments

Able to show Mg deficiency, so go back to farmers with an improved fertilizer blend

Putting nitrogen fixation to work for smallholder farmers in Africa
Looking Ahead….

Use of ICT technologies

1. Smartphone platforms (with GPS info)
   - Real time communication with Farmers
   - Upload to cloud (open source technology)
   - Made available to public, private, non-profit, donors and NGOs to help them make better decisions

2. Crowd-sourcing to obtain bottom-up insights from the field
   - Platforms can be designed that allow creation of individual solutions from knowledge of the crowd.
   - SMS sent to farmers with messages that allows them to accept/reject ideas.
Thank You!!!