MAIZE AFS: Monitoring, Evaluation, Learning and Impact Assessment

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Impact Assessment Focal Point Meeting
Standing Panel on Impact Assessment (SPIA)

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Will MAIZE deliver on SLOs and IDOs (1)?

Maize is an important staple:

- Grown on 184 million hectares (M ha) globally (FAOSTAT)
- Over 30% of calories in 12 countries with 310 million people
- 16 of 22 most maize dependent countries are in Africa
- Contributes over 20% of total calories in human diets in 21 low-income countries
- Maize is to Africa and Central America what rice is to Asia
Will MAIZE deliver on SLOs and IDOs (2)?

Focusing on MAIZE AFS holds much promise for positive impact

SLO1: Reduced Poverty: yield enhancement, value addition, reduced post-harvest losses

SLO 2: Improved food and nutrition security for health: nutrient dense maize varieties available to 20 M people

SLO 3: Improved natural resource systems and ecosystem services: water and nutrient use efficiency
How will it be done (1)?

- **Emphasis on learning, feedback loops, pathways**
  - evaluate impact of “embryonic” technologies on limited scale (e.g. targeted RCTs)
  - consumer surveys, risk analysis and willingness to pay

- **Macro level impact tracking:**
  - **Focus on global** MAIZE AFS (developing world)
  - germplasm development, variety pipelines and release
  - Global Maize impact assessment ongoing to track:
    - Variety releases and catalogues
    - Attribution of varieties to CGIAR/MAIZE
    - Economic impacts
How will it be done (2)?

Expand the frontiers of adoption and impact assessment

1. Cross-sectional surveys (micro-econometrics and allied)
2. Panel surveys and panel econometrics (Adoption Pathways, SIMLESASA)
3. Policy and institutional pre-conditions for adoption
4. Broader, economy-wide impacts of variety adoption
5. RCTs (DTMass, NuME)
6. Adoption dynamics and behavioral aspects
7. DNA fingerprinting
8. GIS, Bio Economic Modelling, Big Data Analysis
Where will the data come from?

- Developing baselines and subsequent datasets
- Existing data or piggyback on an ongoing surveys: DT/STMA, DTMass, RCT on DT with insurance, Adoption Pathways
- Household income and expenditure surveys
- Living Standards Measurement Studies-Integrated Surveys on Agriculture (LSMS-ISA)
- Population and agricultural census and surveys
- Specialized surveys conducted by NARS and ARI partners
- Case studies and data collected by individual projects
- MAIZE and CGIAR commissioned impact evaluations.
How will this feed into RBM?

Value for Money in MAIZE Research

- Agricultural research competes for resources with other investments
  - MAIZE research will be no exception

- To prove it deserves the investments: MAIZE research should demonstrate impact
  - individual farmers, their communities and national economies.

- From the CGIAR perspective
  - important to demonstrate benefits and costs of delivering the products of MAIZE.
How will this feed into RBM (2)?

Core principles of RBM
1. Strategic planning
2. Outcome focus
3. Learning and adaptation based on performance
4. Accountability and transparency
5. Defining and revising the impact pathways at CRP and FP levels
Who will do all this?

• **Establishment of multi-disciplinary teams:**
  – foresight, impact assessment, gender, business, anthropology, geography, geo-spatial sciences and bio-economic

• **Work with ARIs and NARs**
  – scientific contribution and achievement of, complementarities and synergies with in-house capacity and needs.

• **Work with Regional Organizations**
  – ASARECA and CARDESSA in eastern and southern Africa; regional assessments in Asia, SSA and LA in Phase-I
### Some Examples (1)

<table>
<thead>
<tr>
<th>Adoption/Impact Assessment Publication</th>
<th>Topic/Theme of Paper</th>
<th>Key Method</th>
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<tbody>
<tr>
<td><strong>Abate et al., 2015</strong></td>
<td>How sustained investment in agricultural research and development and policy support by the national government revolutionized maize sector in Ethiopia</td>
<td>Review</td>
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<td><strong>Alene et al., 2009</strong></td>
<td>Adoption of modern maize increased from less than 5% of the maize area in the 1970s to about 60% in 2005, with return on (R&amp;D) of 43% in West and Central Africa.</td>
<td>Economic Surplus</td>
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<td><strong>Beyene and Kassie, 2015</strong></td>
<td>Social capital and networks crucial in speeding up the adoption in Tanzania</td>
<td>Duration analysis</td>
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## Some Examples (2)

<table>
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<tr>
<td>Erenstein et al., 2015</td>
<td>Optimal resource stewardship possible with tradeoffs. <strong>E and S Africa, Mesoamerica, North Africa, S. Asia</strong></td>
<td>Crop and system models, econometrics etc</td>
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<td>de Groote et al., 2016</td>
<td>MLN cost $180 worth of damage in <strong>Kenya</strong>, showing potential impact of tolerant maize varieties</td>
<td>GIS, Surveys</td>
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<td>Fisher et al., 2015</td>
<td>Determinants of Drought tolerant maize adoption in <strong>Eastern and southern Africa</strong></td>
<td>Econometrics (cross sectional data)</td>
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<tr>
<td>Kassie et al., 2015</td>
<td>Impacts of maize varieties most prominent when farmers adopt multiple practices in <strong>East and Southern Africa</strong></td>
<td>Econometrics (cross sectional data)</td>
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<tr>
<td>Kathage et al., in press</td>
<td>In regions where returns to hybrids are small, adoption is low in <strong>Tanzania</strong></td>
<td>Econometrics (cross sectional data)</td>
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<td>Micheni et al., 2016</td>
<td>Yield increase, water use efficiency and higher revenue possible for maize farmers if conserving practices implemented in <strong>Kenya</strong></td>
<td>Field Experiments</td>
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<td>Zeng et al., 2015 (SPIA sponsored DIIVA project)</td>
<td>The impact of maize yield varieties on poverty positive in <strong>Ethiopia</strong>. 0.8–1.3% drop of poverty headcount ratio</td>
<td>Econometrics, Economic surplus</td>
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<td>Raghu et al., 2015</td>
<td>Stress tolerant varieties impact positively on yield enhancement, per-unit cost reduction and risk reduction in marginal environments of <strong>India</strong></td>
<td>Econometrics (cross sectional data)</td>
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<td>Snapp and Fisher, 2015</td>
<td>Education, income, market access, and availability of improved storage technologies had higher influence on dietary diversity among maize growers in</td>
<td>Semiparametric econometrics, PSM</td>
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<td>Mutenje et al., 2016</td>
<td>Spouse's education, women's intra-household decision-making power, religious affiliation predicted adoption. Risk management was a motive for adopting CA for maize production in <strong>Malawi</strong></td>
<td>Econometrics</td>
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<td>Tesfaye et al. 2016</td>
<td>DT varieties could give a yield advantage of 5–40% over the commercial check variety across drought environments in <strong>Malawi, Mozambique, Zambia and Zimbabwe</strong></td>
<td>Bio economic crop modelling using big data</td>
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2015 (cont.)

- Raghu et al., 2015. Adoption and outcomes of hybrid maize in the marginal areas of India. Quarterly Journal of International Agriculture 54, 189-214.
Papers 2016 to date

• Micheni et al., 2016. On-Farm Experimentation On Conservation Agriculture In Maize-Legume Based Cropping Systems In Kenya: Water Use Efficiency And Economic Impacts. Experimental Agriculture 52, 51-68.
Thank you for your interest!

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