Spatial targeting and dynamic modeling framework for supporting strategic investment decisions to scale-up agricultural technologies in Mozambique
Established in 2006, we’re a team of passionate data researchers at IFPRI/UMN.

Mission: Generate **knowledge products** for help guiding **strategic investments** to improve the well-being of the poor in sub-Saharan Africa through more **productive and profitable farming**.
Our GUIDING QUESTIONS

- Where are the poor and what is their welfare status?
- Which farming systems do the poor most depend?
- What are the constraints affecting on-farm productivity, technology adoption, and market integration?
- What investments and innovations in technologies and practices might best address those constraints?
- What would be the broader impacts of such change? Who would gain and who might lose?
Production System & Market Access Analysis

**MESO SCALE**
Pixels as Units of Analysis

- **Investment/Policy Analysis**
  - MACRO SCALE
  - Aggregate, market-scale (geo-political) units

- **Household Characterization**
  - MICRO SCALE
  - Change (e.g., climate, technologies)

**Aggregation By Commodity**

<table>
<thead>
<tr>
<th>Region</th>
<th>Urban/Rural</th>
<th>Income tercile</th>
<th>Consumption</th>
<th>Production</th>
<th>Inputs</th>
</tr>
</thead>
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**Fixed Geographies of Analysis**

- Infrastructure/Market Access
- Production System
- Ecosystem Services

**Flexible Geographies/Units of Analysis**

HarvestChoice | Landscape-Level Approach
HarvestChoice Data Portfolio

Agro-ecology
- Climate
- Soil and water
- Land cover and use
- Agro-ecological domains

Demography
- Population
- Income sources and poverty
- Consumption
- Nutrition

Farming
- Farm practices
- Sub-national production
- Input uses
- Pests and diseases

Productivity
- Yield analysis
- Adoption
- Tech. evaluation
- Spillovers
- Profitability
- Factor productivity

Markets
- Infrastructure and transportation
- Market access
- Value of prod.
- Prices

Investments
- CGIAR CRP activities
- CAADP CPP activities
• >350 layer of data
• Allows **decision-makers** to combine indicators from multiple layers to produce customized **maps, charts, and tables**
• Aggregate (10 x 10 km) cells by area of interest or zoom in on a particular cell(s)
HarvestChoice Tools | Tablr

- Same capacity as Mappr
- More advanced table making
- Build your own data tables
New Alliance for Food Security and Nutrition

A commitment by African Governments, private sector, G-8 members, and other development partners to:

- “lift 50 million people out of poverty in sub-Saharan Africa by 2022” and
- focus, accelerate, and coordinate their joint efforts aimed at reducing poverty and hunger in Africa over the next 10 years.

Questions to be Addressed

- Which commodities/value chains to focus on?
- What 10 year yield targets are achievable?
- What existing technologies are available to achieve yield targets?
- How best to tune yield targets and technologies to different sub-national conditions (e.g. major agroecosystems)?
- What policies, strategies, and services are needed to deliver the most appropriate technologies at scale and increase the probability of their sustainable adoption?
- How best to facilitate cross-country learning and knowledge spillover?
Scaling Seeds and Technologies Partnership in Africa (Partnership)

Goal: Coordinating public and private investment in technology delivery in Africa

1. Improving the capacity of public and private sector groups to deliver quality seeds and other technologies to smallholder farmers;
2. Improving the capacity of smallholder farmers to adopt quality seeds and technologies; and,
3. Improving the policy and regulatory mechanisms for the delivery of quality seeds and technologies to smallholder farmers.

Main Objectives

Partnership Countries

Ghana
Mozambique
Tanzania
Malawi
Ethiopia
VALUE-CHAIN

PRIORITIES

Which commodity to focus on?
What factors should consider to decide priorities?
What 10 year yield targets are achievable?
Priority Setting Tool for Commodity Value-Chains in Mozambique

- Which commodities rank high depends on which factors are the most important for the country.
- Developed to use in the New Alliance partners’ technical consultation and help supporting the prioritization on which commodity value-chains to target.
Priority Setting Tool for Commodity Value-Chains in Mozambique

- Ten weighting factors in five criteria:
  1. Economic growth potential
  2. Importance to the poor
  3. Nutrition
  4. Natural resource management impacts
  5. Private sector opportunities

- Technical document describing the approach and detailing data sources and assumptions available to share
  (Contact Naomie Sakana nsakana@gmail.com)
Where to target technology X?
How much area suitable for this technology?
Geospatial Data Layers at 10 km resolution

- A subset of the HarvestChoice ‘CELL5M’ Database, a harmonized multi-thematic grid-based geospatial database
- Provided to AGRA’s technical consultations with IIAM (August 2013) as a background material
- Catalog of publicly available indicators at http://harvestchoice.org/products/data
Quick analysis on the characterization of provinces/districts in Mozambique

- Share of total available cropland areas in each province/district that are suitable for candidate technologies
- Provided to the USAID Mozambique Mission as a background material for the Scaling Plan development (October 2013)
Case Study

Inoculants for Soybean

Where biophysical suitability (soil, climate, and slope) of legumes is **HIGH**

Where soil P retention is **LOW**

Where market accessibility is **HIGH**
Where in Mozambique meets the selection criteria? (Or, where do not meet the criteria)

Available online at [http://goo.gl/6mE715](http://goo.gl/6mE715)
Where in Mozambique meets the selection criteria?
(Or, where do not meet the criteria)

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Where in Mozambique meets the selection criteria?
(Or, where do not meet the criteria)

Available online at http://goo.gl/6mE715
Where in Mozambique meets the selection criteria? (Or, where do not meet the criteria)

No constraint on machinery, low soil phosphorus retention, suitable for legumes, and high market accessibility
Summary of 2013

Awarded USAID grant to provide technical support to the New Alliance partners in focus countries, among which Mozambique was the first one we engaged.

– Prototype tools developed and presented at the workshop.
– Background guiding materials on the scaling technologies developed.
– Quick analyses developed for USAID Mission.
– In close communication with AGRA on the Partnership roadmap development.
Plan for 2014

Technical support for the successful implementation of AGRA’s Scaling Technology Partnership in Mozambique, including:

– Prioritizing and specifying commodity value-chains to focus.
– Validating the selection of specific technologies to scale.
– Identifying the target areas to scale the technologies.
– Estimating potential impacts of the technologies.
– Assessing the need for complementary technology investments to maximize the benefits from the technology.
Check out our latest blog post by Naomie, Jawoo, and Cindy:

New Dawn, New Day: A New Alliance for Africa
(6 Dec 2013)

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