Agricultural Technology Adoption Initiative
Motivation for ATAI

Cereal Yields (Metric Tons/Hectare)
ATAI in Brief

• Why don’t smallholder farmers adopt proven technologies?
• Market failures in:

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ATAI in Brief

• ATAI conducts randomized controlled trials to evaluate interventions designed to overcome barriers to technology adoption

39 unique trials
14 countries
$9.7M awarded
## ATAI Experiments

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For Example: STRASA

Farmers encouraged to take up flood tolerant Swarna-Sub1
- Had similar yields without flooding
- 45% higher yields after 10 days of flooding
- Planted on marginal land, used more fertilizer and labor
• Additional experiments are testing:
  – The impact of short-duration Sahbhagi Dhan (SD) rice
  – The use of coordinated seed exchanges to promote adoption of Swarna-Sub1
  – Whether the benefits of drought-tolerant rice (IR64) carry over to landless laborers, not just farm owner
For Example: NERICA in Sierra Leone

Farmers given free NERICA harvested 3 weeks earlier and had higher yields
Increase in BMI and weight for height
For Example: Quality Protein Maize (QPM) in Ethiopia

How does children nutrition improve with QPM?
Can we prompt families to focus QPM on children?
The coordination of trials around a framework allows ATAI to draw more generalizable lessons around key policy questions in agriculture.

**RISK**

Demand for **index insurance** is low. Risk-mitigating crops may be more successful in protecting agriculture from climate shocks.

**INFORMATION**

Information is most effective when it overcomes a **behavioral hurdle** or describes a **new crop**. Generalized extension rarely works.

**CREDIT**

Credit products should offer flexible collateral arrangements and account for the seasonal distribution of farmer income.
• What strategic investments are you making in research and development this year?
• Are you measuring adoption of new varieties?
• What questions do you have about technology adoption of improved crops?
• Other priority questions for research?
Additional Slides - Projects
Swarna-Sub1 - Overview

• Research partnership between Berkeley and International Rice Research Institute
• Focus on Swarna-Sub1 – a new flood-tolerant rice variety
• Multi-year project aimed at measuring:
  1) Efficacy in farmer’s fields
  2) Change in agricultural decisions due to reduction in risk
  3) Ability of decentralized trade between farmers to allocate
Swarna-Sub1 Effective in Fields

- Randomized experiment in 128 villages of Odisha
- Mini kits of seeds distributed to farmers for free
Swarna-Sub1 Effective in Fields
Swarna-Sub1 Effects

- Swarna-Sub1 benefits socially marginalized groups
Swarna-Sub1 Effects

• In the second year, with no flooding, treatment farmers invested more in production:
  – Cultivated more land
  – Used more “early fertilizer”
  – Increased use of transplanting technique
  – Used more ag credit
  – Saved less rice for future consumption

**Increased yields by 10% with no flood due to management decisions (ie. not flood-tolerance of rice)**
Swarna-Sub1: Seed Exchange

• Second experiment: Is standard farmer-to-farmer exchange efficient?
• 82 villages in Bhadrak district of Odisha, India
• All villages: 5 random farmers receive Swarna-Sub1 in May 2012
• One year later:
  - ½ of villages – do nothing
  - ½ of villages – door-to-door sales to reveal demand
Farmer-to-farmer trade leads to adoption gap
Exchange is limited to pre-existing social groups
Swarna-Sub1: Upcoming Project

• 5 randomly selected farmers per village receive minikits
• In 40 villages, farmers who receive minikits will be coordinated (by an NGO) for a seed exchange event. Potential buyers will be notified via SMS and village announcements
• Control group will be exchange via networks, as usual
• Yield benefits of two upland rice varieties in Sierra Leone:
  – NERICA3 – early maturation (90 days), high yielding
  – ROK16 – pest resistant, regular maturity, high yielding

• Demand for NERICA through random variation in price
  • Full price, half price and free treatments for NERICA;
  • free treatment for ROK

• Complementarities with training

• Partners: SLARI and the IRC
Take Up

Mean Take up

NERICA Full Price  21%
NERICA Half Price  62%
NERICA Free  97%
ROK Free  95%
Yields, All Nerica, Excluding Port Loko
NERICA: Harvest Week

![Bar chart showing mean earliest harvest week across different village treatment statuses: Control, Full Price, Half Price, and Free. The chart compares treatment households (gray) and control households (dark blue). The error bars represent 95% confidence intervals.](image-url)
NERICA: Total/Partial Failure
NERICA: Impact on Imported Rice Purchase

![Bar chart showing the impact of village treatment status on imported rice purchase quantities and 95% confidence intervals.](chart.png)
NERICA: Impact on Nutrition

![Graph showing BMI comparison between different treatment statuses with mean and 95% confidence interval bars.]

- Control + Spillover
- Treatment + No Training
- Treatment + Training
Ethiopia QPM: Upcoming Project

• Partners: CIMMYT; Ethiopian Public Health Institute
• 3,000 households participating in NuME project with at least one pregnant woman OR one child <5 years old
• EPHI staff present household heads and female caregivers on nutritional benefits of QPM and offered subsidized 2kg packages of QPM seed
• 800 of the households received storage containers to “earmark” QPM for children
Additional Slides - ATAI
ATAI Partners

- AgriFuturo
- AgriNet
- AusAID
- Awaaz.De
- Balasore Social Services Society (BSSS)
- Banco Oportunidade de Mozambique (BOM)
- BRAC
- Brookside Dairy
- Centre for Microfinance
- Centre for Development Innovation and Practices
- CIMMYT
- Conservation Farming Unit
- Dashen
- Development Support Center
- Dunavant Cotton
- Ethiopian Economics Association
- Farm Concern International
- Fundación Natura Bolivia
- Grameen Foundation
- Harvard University Sustainability Science Program (SSP)
- IFMR Trust
- Index Insurance Innovation Initiative (I4)
- Innovations for Poverty Action (IPA)
- International Fertilizer Development Center (IFDC)
- International Fertilizer Development Corporation
- International Finance Corporation (IFC)
- International Food Policy Research Institute (IFPRI)
- International Growth Centre (IGC)
- International Initiative for Impact Evaluation (3ie)
- International Rescue Committee (IRC)
- International Rice Research Institute (IRRI)
- Karnataka Milk Federation
- Livestock & Dairy Development Department, Gov. of Pakistan
- LSE
- Makerere University
- mCel
- Micro Africa Limited
- Microfinance Investment and Technical Assistance Facility, Government of Sierra Leone
- Millenium Challenge Corporation (MCC)
- Ministry of Agriculture and Food Security, Malawi
- Ministry of Agriculture, Forestry and Food Security, Government of Sierra Leone
- Ministry of Agriculture, Gov. of Senegal
- Ministry of Food and Agriculture, Government of Ghana
- Mumias Sugar Company
- Nyala
- Nyala Dairy Cooperative
- One Acre Fund
- Pudhuaaru KGFS
- Savanna Agricultural Research Institute (SARI)
- Science of Generosity
- Shoreline Services Limited
- Sierra Leone Agricultural Research Institute (SLARI)
- Swiss Re
- Syngenta Foundation
- United States Agency for International Development (USAID)
- Universite Gaston Berger (UGB) in Saint Louis (Senegal)
- University of Zambia
- World Bank