The success of flood-tolerant rice in eastern India

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Overview of Project

• 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
Unique opportunity due to partnership with IRRI

- In addition to developing new varieties, IRRI allocates resources towards dissemination
- Often through partnerships with governments
  - Opportunity to turn research findings into actionable strategies for policy at a large scale
Study 1: Swarna-Sub1 effective in farmer’s fields

- Randomized experiment in 128 villages of Odisha
A slightly less statistical view
Study 1: Swarna-Sub1 to benefit socially marginalized groups
Study 2: Swarna-Sub1 leads to gains through management practices

• Same experiment, but 2\textsuperscript{nd} year with no flooding
• Treatment farmers:
  - Cultivate more land
  - Use more “early fertilizers”
  - Increase use of transplanting technique
  - Increase uptake of ag. credit
  - Decrease savings of rice for future consumption

\(\rightarrow\) Yield goes up by 10\% in normal year because farmers move away from conservative decisions
Study 3: How to get this stuff into farmer’s hands?

• **Question:** Does decentralized exchange between farmers efficiently allocate new seed varieties?
  - Farmer-to-farmer exchange common in India
  - Only way of getting variety when private companies are absent and govt. supply unreliable
  - But, little is known about effectiveness
Experiment compares 2 ways of trading

• 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
The door-to-door treatment is real simple
Result 1: Farmer-to-farmer exchange leads to adoption gap
Result 2: Frictions limit seed exchange to pre-existing social groups
Result 3: Networks are better at targeting flood-affected farmers
Result 4: Overall, trade via networks leaves a lot on the table
Policy Implications

1) Technology works both in terms of agronomics and by reducing conservative behavior

2) But, relying on farmer-to-farmer exchange for dissemination of new seeds does not meet demand
   – But, feasibility of door-to-door is questionable

3) Supply side barriers are very important
   – A free and easy source of supply \( \uparrow \) adoption a lot
   – Hence, focus on supply side is important
In absence of seed dealers, can decentralized trade work?

• Perhaps random selection of entry points is not wise
• Or, coordination problem between original cultivators and potential buyers
• In future experimental work:
  1) Engage local groups (farmer’s clubs and SHG’s)
  2) Organize seed fairs as way of coordinating transactions