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

-National Food Security Mission in India: Investment in spread of stress tolerant rice varieties

➔**Opportunity to turn research findings into actionable strategies for policy at a large scale**

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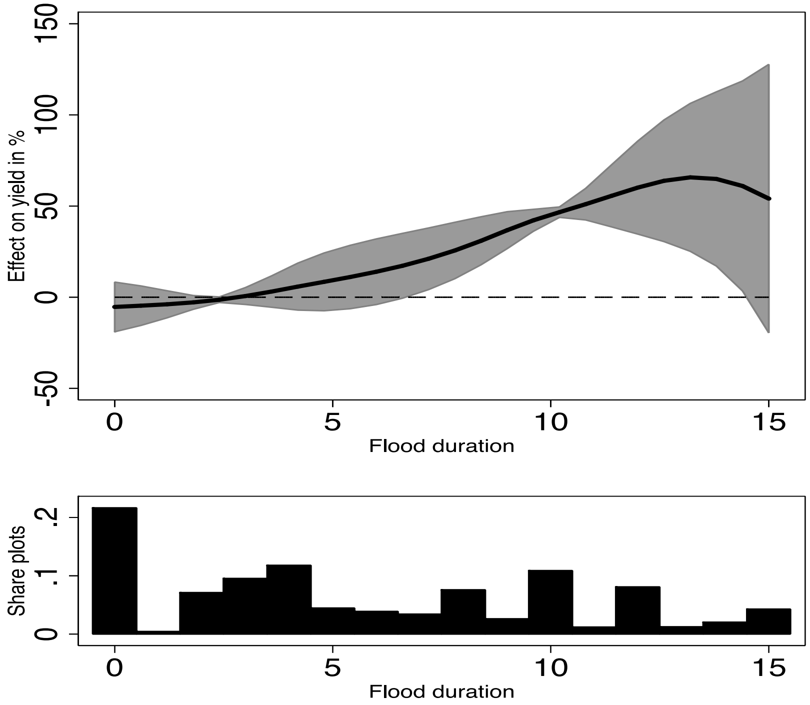
Study 1: Swarna-Sub1 effective in farmer's fields

- Randomized experiment in 128 villages of Odisha



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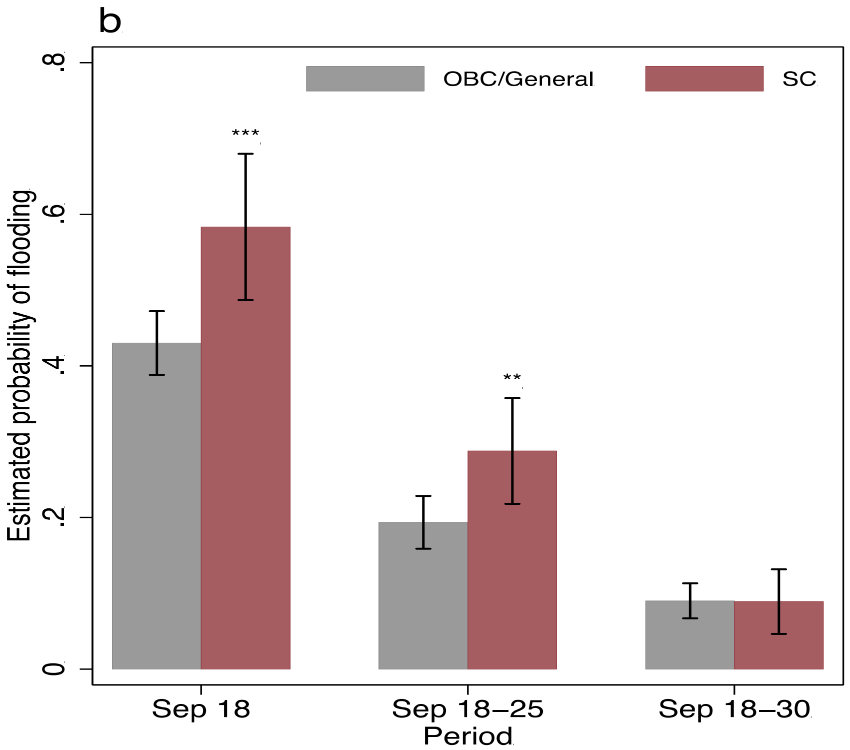
A slightly less statistical view

Study 1: Swarna-Sub1 to benefit socially marginalized groups



Study 2: Swarna-Sub1 leads to gains through management practices

- Same experiment, but 2nd 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

➔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

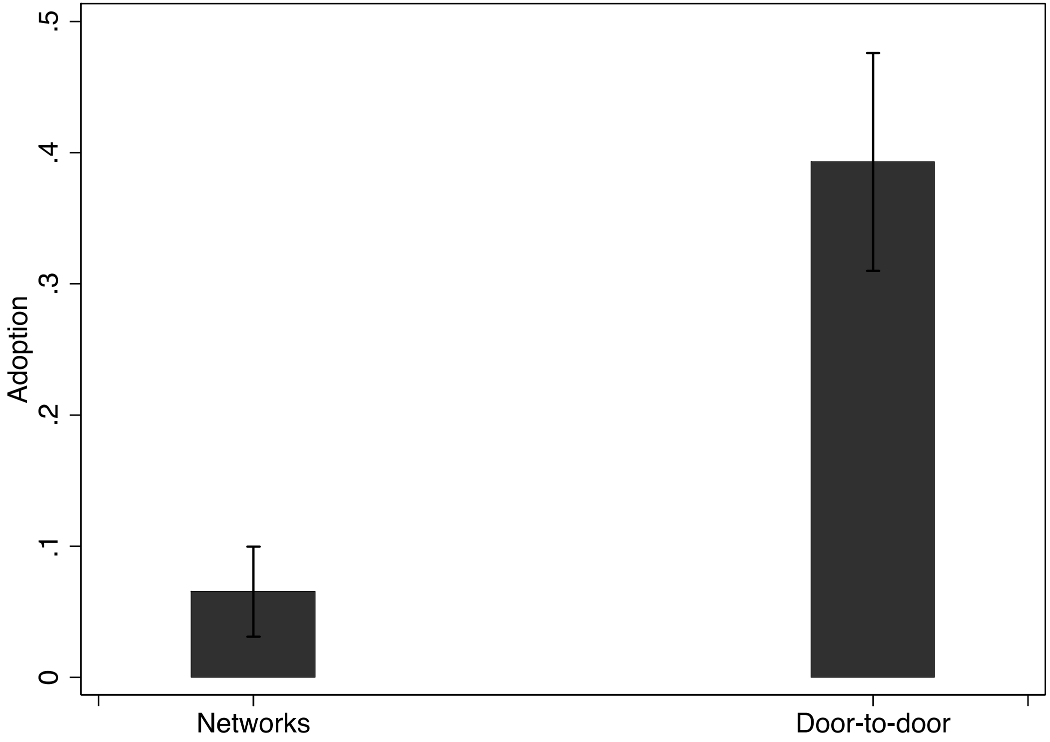
-But, little is known about effectiveness

Experiment compares 2 ways of trading

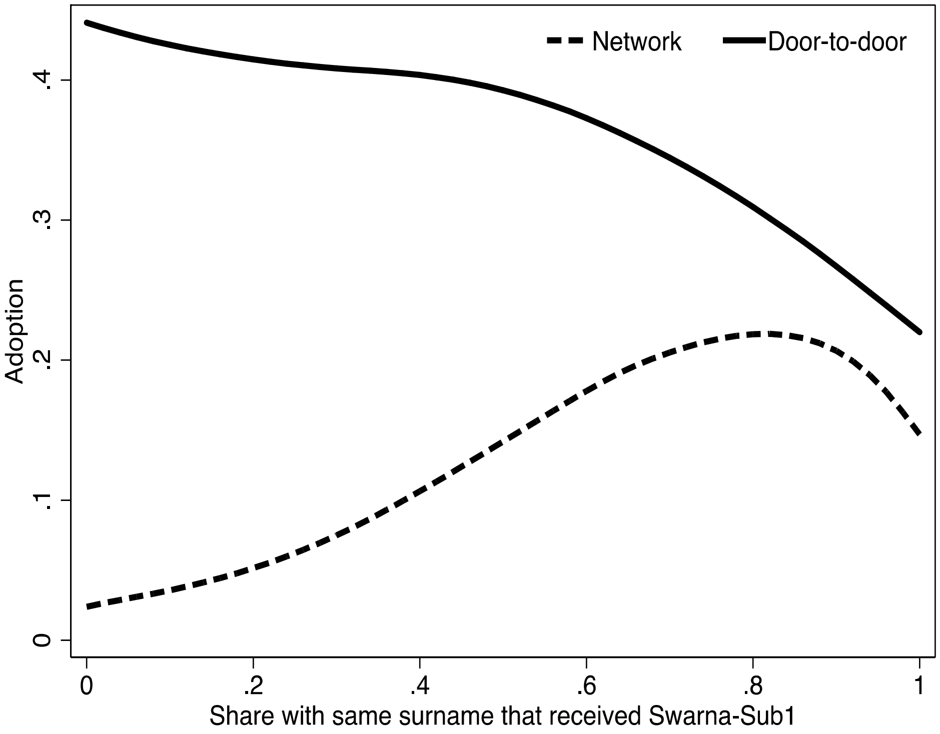
- 82 villages in Bhadrak district of Odisha, India
- All villages: 5 random farmers receive Swarna-Sub1 in May 2012
- One year later:
  - ½ of villages – do nothing
  - ½ of villages – door-to-door sales to reveal demand

The door-to-door treatment is real simple

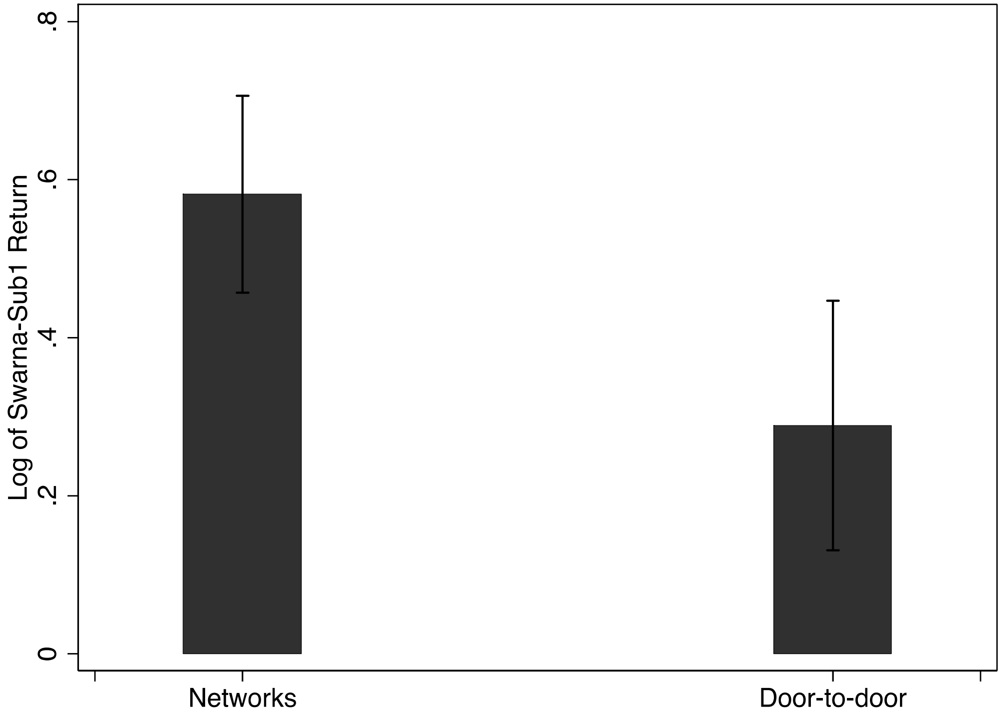
Result 1: Farmer-to-farmer exchange leads to adoption gap



Result 2: Frictions limit seed exchange to pre-existing social groups



Result 3: Networks are better at targeting flood-affected farmers



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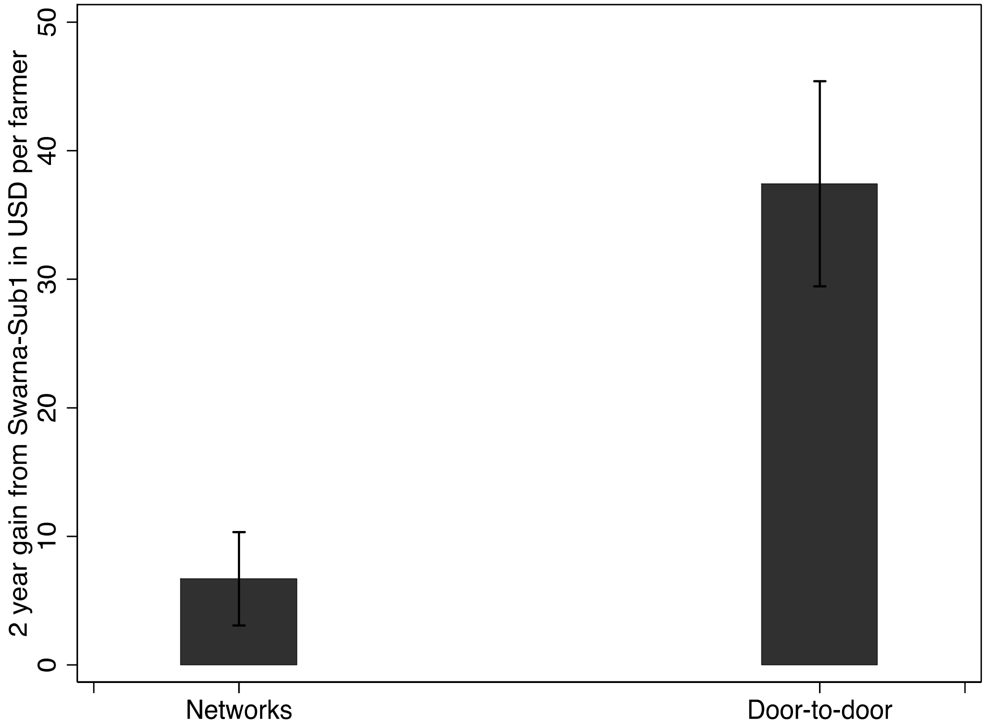
Result 4: Overall, trade via networks leaves a lot on the table



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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 ↑ 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