

Targeted Information for The Adoption of Flood-Tolerant Rice in India

Researchers:

Manzoor Dar

Kyle Emerick

Elisabeth Sadoulet

Sector(s): Agriculture

J-PAL office: J-PAL South Asia

Location: Odisha

Sample: 72 administrative areas with 150 villages each

Initiative(s): Agricultural Technology Adoption Initiative

Target group: Farmers Rural population Agro-dealers

Outcome of interest: Technology adoption

Intervention type: Extension services Fertilizer and agricultural inputs Information Improved seeds

AEA RCT registration number: AEARCTR-0002121

Partner organization(s): Government of Odisha, National Food Security Mission, International Rice Research Institute (IRRI), Odisha Department of Agriculture & Farmers' Empowerment, Odisha State Seed Corporation, Bill & Melinda Gates Foundation, Foreign, Commonwealth and Development Office (FCDO)

Flood tolerant rice has been promoted in India since 2009 without widespread adoption by farmers. Farmers may not have information about the availability of improved seed varieties as they may not be promoted or sold by their local agricultural input dealer, so ensuring agricultural input dealers, or agro-dealers, are informed about the benefits of new seed varieties and consistently stock them could increase the use and adoption of new technologies by farmers. Researchers are conducting an evaluation to test the effect of providing information and experimental kits of seeds to agro-dealers on the adoption of the improved seed variety by their customers.

Policy issue

Before adopting a new technology, farmers need information about its costs and benefits. Extension services have traditionally tried to inform farmers and spread new technologies by conducting farmer field days and providing new technologies first to select farmers, who then share their experience with other farmers in their community. However, many smallholder farmers, also seek information from agro-dealers, who typically sell seeds, fertilizers, and agrochemicals. Because agro-dealers directly benefit from increasing demand for new technologies through additional sales, agro-dealers may be more effective (and cost-effective) in disseminating information than government-trained farmers, who have less to gain from diffusing technologies. Can engaging directly with the private sector to disseminate information and sell improved seed varieties to farmers lead to higher adoption rates?

Context of the evaluation

Swarna Sub-1 (SS1), a submergence-tolerant rice variety, reduces yield losses under flooding conditions while leaving yields unaffected during non-flood years. Previous ATAI-funded research tested the impact of SS1 in 2011 in Odisha, a flood-prone state in the coastal belt of India and found that adoption of SS1 led to substantial increases in farmer profits. Despite these benefits, only around 20 percent of farmers in Odisha used SS1 in 2015, four years after the evaluation. When surveyed about their decision to adopt or not, farmers noted that they did not have information about the new variety or that there was a lack of access to seeds because few agro-dealers stock them, suggesting that the current agricultural extension system and supply networks are not effective in enabling farmers to adopt this new technology.

Under the current extension system in Odisha, government extension agents distribute kits of seeds and inputs to select farmers and conduct demonstrations with recommended inputs or practices among groups of 30 farmers with neighboring plots, termed cluster demonstrations, where farmers use the new technology under the extension agent's cultivation methods not their own.



Photo: J-PAL

Details of the intervention

Researchers conducted a randomized evaluation to test the impact of targeted extension services to agro-dealers on farmers' adoption of SS1 seeds in Odisha. In partnership with Odisha's Ministry of Agriculture, India's National Food Security Mission (NFSM), and the International Rice Research Institute (IRRI), researchers modified the current extension system by delivering

information and seeds directly to agro-dealers between 2017 and 2018.

Of the 72 flood-prone blocks (administrative groups of 150 villages) included in the study, researchers randomly assigned half to undertake either agro-dealer-focused or farmer-focused extension services.

- **Agro-dealer:** In each of the 36 blocks in this group, up to ten agro-dealers received a kit of 40 kilograms of SS1 seeds as well as a small information sheet on the benefits of the rice variety and where to obtain seeds for the next growing season. Dealers could test the seeds as they wished, allowing them to learn about the variety's quality and then pass information on to their customers.
- **Farmer (comparison group):** Researchers worked with government extension agents to provide standard extension services to farmers.
 - Government agents received and distributed kits of 5 kilograms of SS1 seeds, inputs, and information sheets to five farmers in two villages from each block during the spring of 2017. Farmers used their minikits to cultivate plots beside plots with their next best variety for a head-to-head comparison. Agents then used these direct comparison plots to lead farmer field visits.
 - Government extension agents received 150 kilograms of SS1 seeds to conduct standard cluster demonstrations in the fall of 2017.

To ensure farmers and dealers knew how and where to access seeds, researchers conducted an information campaign starting a year into data collection, during the spring of 2018. Researchers called all agro-dealers across both groups and shared information on three seed producers that carried the SS1 variety. A randomly selected subset of farmers in the farmer group also received text messages informing them that SS1 seeds were available and could be purchased from agro-dealers.

To measure adoption and the availability of SS1 seeds, researchers surveyed farmers, agro-dealers, and public seed distributors in two villages in each block for the 2017 and 2018 agricultural seasons after the intervention was implemented in the summer of 2018.

Results and policy lessons

Study ongoing; results forthcoming.