Strengthening the case for a picture-based index insurance model

Highlights

Evidence impact

- Recognised as a CGIAR@50 Innovation in 2021
- The picture-based insurance product is being piloted with farmers in seven counties of Kenya as part of the Cultivate Africa's Future Fund, a partnership between the Australian Centre for International Agricultural Research and the International Development Research Centre.
- The picture-based model is being scaled up in Odisha and Tamil Nadu as part of the Inspire Challenge 2018 of the CGIAR Platform for Big Data in Agriculture.
- Picture-based index insurance is being piloted in Ethiopia as part of IFAD's Adaptation for Smallholder Agriculture Programme II.

Factors that contributed to impact

- The research team ensured strong buy-in by cultivating trust relationships and through rigorous engagements with government partners at the state, national and regional levels.
- The researchers were effective knowledge translators and disseminated evaluation findings through a series of engagements and a variety of knowledge products.

Evidence use brief

Impact evaluation details

Title: Picture-based crop insurance: A randomized controlled trial evaluating the impa…

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Context

Exposure to weather hazards, pests, crop diseases, and climate change threaten the livelihoods of many smallholder farmers in low- and middle-income countries. A lack of agricultural insurance has severe financial consequences for farmers in the aftermath of shocks; however, even in uneventful years, it discourages risk-averse farmers from investing in profitable agricultural production opportunities, thereby limiting the adoption of practices and technologies that would

improve productivity and income.

Farmers in Haryana, a state in northern India, have limited access to instruments for managing agricultural production risks. Although they have access to the Pradhan Mantri Fasal Bima Yojana scheme, which provides subsidized insurance coverage for major crops across India, its coverage is incomplete. Since it relies on area-yield, index-based insurance, with claims settlements based on average yields measured through crop-cutting experiments in a predefined area, farmers do not receive payouts based on their individual losses. Moreover, the cost and logistical challenges around conducting crop-cutting experiments across the country result in long delays in assessing claims and issuing payouts, depriving farmers of additional income when it is most needed. Finally, the scheme provides insurance coverage only for major crops and does not cover farmers for damage to commercial crops grown at a smaller scale.

To overcome these challenges, Housing Development Financial Corporation Ergo General Insurance, together with researchers from the International Food Policy Research Institute and the Borlaug Institute for South Asia, designed a picture-based insurance (PBI) solution that uses smartphone photographs of insured crops to identify damage and settle claims. PBI aims to bring out the best of both indemnity-based and index-based insurance by offering a new way of managing risk.

Evidence

The evaluation found that uptake has been moderate, with approximately 22 per cent of eligible farmers agreeing to participate and submit images of their crops in exchange for free insurance or cash incentives. The moderate uptake is arguably related to several key implementation challenges, including a slow build-up of farmer rapport over time, difficulties in gathering sensitive enrolment documents from farmers, a relatively low number of PBI payouts, and substantial delays in disbursing them. The study found large effects of the intervention on insurance uptake and perceptions of insurance, as well as small effects on investments in the extensive margin (i.e., types of crops produced, acreage, and the number of seasons over which target crops are produced). However, very limited or no effects on investments were found in the intensive margin (i.e., input usage) or other agricultural, economic, and well-being outcomes. The authors believe these findings have separate implications for the private and public sectors.

The findings suggest that PBI is a useful innovation for the private sector (particularly for insurers) to provide more tangible and trusted insurance coverage to farmers and increase demand for their services. However, the limited impact on agricultural outcomes or household well-being suggests that there is little justification for using public funds to foster private-sector efforts to incorporate PBI into their product portfolios. Instead, many of the challenges faced in implementing this impact evaluation point to a need for investment in digital infrastructure, particularly for the poor and marginalized, in order to create a more enabling environment in which insurers can provide PBI and other commercial solutions in an economically viable way.

Evidence impacts

Recognised as a CGIAR@50 Innovation
As CGIAR marked its 50th anniversary in 2021, it shortlisted the best scientific breakthroughs and innovations of CGIAR in the past five decades that have made a difference in some of the world's biggest challenges. The 3ie-funded study of IFPRI's picture-based insurance initiative

[was recognized as a CGIAR@50 Innovation](#). CGIAR is a global research partnership for a food-secure future dedicated to transforming food, land, and water systems in a climate crisis.

Picture-based insurance piloted with farmers in Kenya

ACRE Africa, in partnership with Kenya Agricultural and Livestock Research Organization, International Food Policy Research Institute (IFPRI), and Wageningen University and Research, is [piloting IFPRI's picture-based insurance (PBI) with farmers in seven counties of Kenya](#). This project is part of the Cultivate Africa's Future Fund, a partnership between the Australian Centre for International Agricultural Research and the International Development Research Centre. The success of the PBI concept in India, notably in estimating losses and reducing administrative costs, informed [ACRE Africa's product in Kenya](#).

Scale-up of picture-based model to Odisha and Tamil Nadu, India

International Food Policy Research Institute, in partnership with the Center for Agriculture and Biosciences International (CABI), was awarded $250,000 for [scaling up the model of using farmers' self-collected camera data to provide agricultural services](#) as part of the Inspire Challenge 2018 of the CGIAR Platform for Big Data in Agriculture. This follows the Inspire Challenge 2017 award of $100,000 for concept development. The Inspire Challenge called for proposals that use big data approaches to advance agricultural research and development.

This award funding supported the [expansion of the picture-based model in Odisha and Tamil Nadu in India](#). In Odisha, the concept was adapted to provide a digital picture-based credit model to expand access to credit for landless and marginalized farmers in partnership with Dvara E-Rgistry. In Tamil Nadu, the concept was adapted to provide picture-based advisories through Plantwise, a highly localized extension model developed by the CABI, that empowers qualified individuals as Plant Doctors who provide remote real-time advisory services to farmers.

Picture-based index insurance piloted in Ethiopia

In 2019, the World Food Programme in partnership with the International Food Policy Research Institute (IFPRI) and the International Research Institute for Climate and Society, [piloted the picture-based index insurance for seasonal monitoring to address basis risk challenges in Ethiopia](#). This was funded by IFAD's Adaptation for Smallholder Agriculture Programme II (ASAP2). The pilot studied the use of digital repeat photography through smartphone cameras as a tool to strengthen seasonal monitoring of crop health and damage in Ethiopia. In 2020, the R4 Rural Resilience Initiative (R4) in Ethiopia launched a partnership with IFPRI and the Ethiopian Institute for [Agricultural Research to continue funding the implementation of picture-based index insurance](#).

Suggested citation

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