



Satellite and cellphone imagery increases climate-smart crop insurance in Kenya

Weather hazards, such as erratic rainfall, cause significant hardship for smallholder farmers in Kenya. Climate change is expected to further exacerbate farmers' vulnerability to extreme weather. The anticipation of possible losses discourages farmers from making productivity-enhancing investments, trapping them in low-risk yet low-return agriculture. Agricultural insurance can be a sustainable approach to unlock investments in agriculture for smallholders and improve their resilience and productivity.

The challenge

The livelihoods of millions of smallholder farmers across the developing world are under threat from extreme weather events, such as droughts, floods and heatwaves, with risks projected to significantly increase in future due to climate change. Crop insurance protects farmers against financial risks posed by weather unpredictability and has been widely advocated as a tool to help farm households escape poverty traps and invest in climate-smart high-productivity agriculture.

However, the number of successful insurance schemes targeting smallholders is limited due to high monitoring and verification costs of traditional insurance; low demand for index-based insurance owing to a design that eliminates the need to verify losses; and because insurance products, in their design, often neglect complementary risk-management options, such as irrigation and drought-tolerant cultivars.

The research

The project team will compare picture and satellite-based insurance with area and yield-based insurance, and assess effectiveness in increasing productivity, resilience and food security of smallholder farmers. Researchers will use satellite and cellphone imagery to verify losses, observe management practices and engage with farmers, and rigorously evaluate the demand for and impacts of insurance packages. The project team will promote the adoption of productivity-enhancing yet resilient technologies through bundling with stress-tolerant seeds and remote advisories. Ground pictures taken by farmers will help reduce monitoring costs, minimize basis risks and create synergies with climate-smart technologies. By taking pictures of insured crops, farmers engage directly in the insurance process, improving trust and tangibility.

Expected outcomes

- 45,000 farmers trained on the benefits of climate-smart risk management strategies, of which a third are expected to adopt the technology;



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- Increased adoption of resilience enhancing technologies (irrigation and use of drought resistant varieties);
- Reduced crop losses from weather risks;
- Increased productivity and production diversity;
- Increase in insurance coverage and reduction of insurance premiums in the long run due to the low cost of the product;
- The use of picture-based insurance will improve trust between farmers and insurers and lead to more farmers adopting insurance products;
- Longer term impacts are expected on food and nutrition security from reduced crop losses and use of climate-resilient technologies, such as irrigation.

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Countries: Kenya

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