CGIAR
RESEARCH PROGRAM ON
Climate Change, Agriculture and Food Security
CCAFS

Weather index-based insurance

A tool for managing climate risk

Bad weather is a serious risk for low-income farmers, pastoralists, fisherfolk and others whose livelihoods depend on the natural resource base. CCAFS is working with partners around the world to develop weather index-based insurance schemes that help secure farmers' livelihoods and give them the capacity to invest in climate-smart technologies, thereby helping to secure the world's food supply.

The increasing frequency and severity of droughts, storms and other extreme weather events associated with climate change reduces livelihood options for millions of small-scale farmers in low-income countries. For example, banks are unlikely to lend to farmers if they think that a drought might lead to widespread defaults, even if the farmers could pay back the loans in most years. Most poor and vulnerable farmers are risk-averse. They are unwilling – and often unable – to invest in improved seeds and other agricultural inputs. In a good year, such an investment might help them to substantially increase their yields. But if something goes wrong and, with climate change, something often does, they might lose their crop, their food security and their livelihood. In the worst-case scenario, they are left with a large debt that they have no way to repay.

Weather index-based insurance is an attractive approach to managing weather and climate risk because it uses a weather index, such as rainfall, to determine payouts and these can be made more quickly and with less argument than is typical for conventional crop insurance.

> "Insurance protects farmers from crop losses due to bad weather and encourages them to innovate."

With weather index-based insurance contracts, an insurance company doesn't need to visit the policyholder to assess damages and arbitrate claims. Instead, if the rainfall recorded by gauges is below a previously agreed threshold, the insurance pays out automatically. Faster payouts mean that farmers don't have to sell their assets to survive and that the need for emergency food aid is reduced. All of these advantages should make weather index-based insurance attractive to low-income farmers.

There are synergies between insurance and credit. With insurance, farmers may be more willing to take on bank loans and banks more willing to give them. This gives farmers the capacity and confidence to invest in new technologies.

India has seen the widespread adoption of weather index-based insurance schemes, with the private sector playing a leading part in devising and marketing a range of affordable schemes for smallholders that are reliable and transparent, faster to pay out and less susceptible to fraud (see Box).

A number of African countries, including Ethiopia, Kenya, Malawi and Mozambique, have also experimented with weather index-based insurance schemes. The schemes protect farmers from catastrophic losses due to weather calamities, such as droughts, floods and extreme temperatures. Partly because the private sector is less well developed in this region, uptake has so far been mainly on a pilot scale. CCAFS is watching these initiatives – including the ILRI-led index-based livestock insurance project – carefully in order to test and apply such mechanisms in CCAFS countries in Africa in future.

Photo: N. Palmer (CIAT)

India's experience: Going for widespread adoption

India's agriculture depends heavily on the annual monsoon, which in recent years has become increasingly uncertain in onset, duration and intensity. Today, rainfall variations account for more than 50% of the fluctuations in the country's crop yields. Under these conditions, weather index-based insurance offers a means of cushioning farmers against the adverse financial effects of crop failure.

In the State of Bihar in India, for example, the onset of the monsoon was delayed in 2012, leading to delayed planting and yield losses in rice. In the CCAFS climate-smart villages in the Vaishali District of Bihar, more than 200 farmers had signed up for a weather index-based crop insurance scheme offered by the Indian Farmers Fertilizer Cooperative and Tokio General Insurance (IFFCO-Tokio). The farmers received their first payment soon after the rains failed, enabling them to get back on track quickly by investing in new seeds and re-planting.

In many Indian states, public and private programmes now offer weather index-based insurance contracts for a variety of crops, providing cover against a wide range of adverse weather conditions, including excessive rainfall, drought, low temperatures, high temperatures, high humidity and high wind. The index is based on measurements taken at weather stations around the country.

Weather index-based insurance was formally introduced to Indian farmers in 2003 through a programme initially supported by the World Bank. By 2007, the national government had adopted it as an alternative to the existing crop-yield-index insurance. And by 2012, up to 12 million farmers growing 40 different crops over 15 million hectares were insured against weather-related losses.

To achieve its full potential, the use of weather index-based insurance needs to reach a much higher proportion of India's 1.2 billion population, 60% of which depends – directly or indirectly – on agriculture. To help meet that goal, CCAFS is investigating the behavioural and economic constraints that limit the uptake of weather index-based insurance by smallholder farmers. CCAFS is also working with the Agricultural Insurance Company of India to help them design schemes that are better suited to farmers' needs. This means, for example, minimizing basis risk, to ensure that claim payments actually match the farmers' losses. CCAFS researchers are also combining crop models with historical climatic data in order to identify critical weather triggers for various crops. The insurance company is using this knowledge to improve the schemes that already reach hundreds of thousands of farmers. The researchers have also set up an innovative pilot where farming communities themselves monitor and register losses using modern ICT tools. Finally, through the climate-smart village project, CCAFS is working with farmers to test and implement a number of climate-smart tools and technologies such as water management and soil conservation. When used together with insurance, these practices could produce long-term benefits for farmers and help them become more resilient to climate change.

Weather index-based insurance is not a panacea and it does suffer from certain drawbacks. The most common factor limiting uptake in the short term is the low density of weather stations in many countries, particularly in Africa. There is an urgent need to determine how contracts can be designed to meet the needs of very vulnerable groups, especially women. In the longer term, a more intractable challenge is the rising levels of risk as climate change gathers pace. Integrated risk management solutions such as ones being tested in CCAFS climate-smart villages may effectively address these concerns.

To find out more about Index-based Insurance for Farmers, please visit http://ccafs.cgiar.org/weather-index-based-insurance

Photo: N. Palmer (CIAT)

About CCAFS

The CGIAR Research Program on Climate Change, Agriculture and Food Security (CCAFS) is a strategic partnership of CGIAR and Future Earth, led by the International Center for Tropical Agriculture (CIAT). CCAFS brings together the world's best researchers in agricultural science, development research, climate science and earth system science, to identify and address the most important interactions, synergies and tradeoffs between climate change, agriculture and food security. www.ccafs.cgiar.org

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