

Climate services for smallholder farmers

Helping farmers cope with risk

Through the ages, farmers have used indigenous knowledge and traditional coping strategies to adapt to changes in weather and climatic conditions. Now, increasingly erratic climate variability is making it difficult for farmers to keep up.

Climate uncertainty often influences farmers' decisions. It may deter them from adopting new technologies and market opportunities. While taking such risks could improve yields and boost profits in a good season, an extreme weather event or outbreak of disease can wipe out crops or livestock, leaving farmers with nothing to eat and a large debt to repay. Institutions that influence and support farmers, such as national agricultural research and extension systems and development non-governmental organizations (NGOs), are also affected by climate uncertainty because it affects the type of backup that they provide to farmers. Climate uncertainty also has a negative impact on the providers of credit and markets for productive inputs and can make it difficult for smallholder farmers to benefit from agricultural markets.

Climate information reduces uncertainty and can help farmers make better use of new seeds and technologies. Such information can be used to support complex and context-specific decisions about farm labour and resource allocation. Climate information should be accompanied by services that communicate, train and help users understand how to interpret and act on the information.

Delivering climate services

Farmers have a deep knowledge about risks and variability. For example, they can predict the arrival of the rainy season by a change in wind patterns and imminent rain by changes in cloud colour. Climate forecasts bring in new information to complement and enhance farmers' knowledge, enabling predictions for the rainy season to be extended beyond the timeline for traditional indicators.

CCAFS is leading a process that starts by tapping farmers' memories of past variability in rainfall frequency, dry spells beyond particular lengths, variability in the start and duration of the rainfall season and planting dates. This information helps researchers to determine and map the probability of future rainfall events, which, in turn, helps farmers understand how they can benefit from seasonal forecasts. Pilot projects in Kenya, Senegal and Tanzania are using seasonal forecast information to help farmers make better-informed decisions about planting and harvesting. The projects have held training workshops to teach farmers about the probabilistic nature of seasonal climate forecasts, and in turn, the researchers

have learned about the farmers' traditional climate knowledge and management responses. As a result of the training, farmers have more trust in seasonal forecasting, which has opened the door to improved agricultural management options.

Effective climate services rely upon locally relevant climate data tailored to farmers' needs. Under-resourced national meteorological services need support to be able to supply such information over large areas. CCAFS has supported work in Ethiopia and Tanzania to improve datasets and make forecast products available online. Efforts are underway to expand these techniques to other countries in East Africa, which will bring climate services to millions of farmers.

Forecasts must reach remote rural communities in time for farmers to make use of them. Mobile phones and rural radio have been successfully used to convey weather information to a very large audience. Nevertheless, personal interactions are probably most effective for communicating complex climate messages. CCAFS is building connections between national meteorological services and communications

A recent CCAFS workshop brought together more than 100 experts from 30 countries and roughly 50 institutions to address the challenges involved in the delivery of climate advisory services. The workshop found that there are five challenges to farmers benefitting from climate services:

- ▶ **Salience:** tailoring content, scale, format and lead time to farm-level decision-making;
- ▶ **Access:** providing timely access to remote rural communities with marginal infrastructures;
- ▶ **Legitimacy:** ensuring that farmers own climate services and can shape their design and delivery;
- ▶ **Equity:** ensuring that women and poor and socially marginalized groups are served;
- ▶ **Integration:** providing climate information as part of a larger package of agricultural support and development assistance, enabling farmers to act on the information they receive.

In addressing these challenges, CCAFS focuses on the areas that national meteorological services – whose main purpose is to provide high quality climate and weather information – may not have the capacity to deliver alone, such as salience, access and equity.

'intermediaries' on the ground: organizations with access to both farmers and ICT capabilities. CCAFS works with agricultural extension services and development NGOs to equip them to incorporate climate advisory services into the support they provide to smallholder farmers.

CCAFS is tapping into experience of delivering agro-meteorological advisories to farmers at the national level. Researchers are studying India's very successful Integrated Agro-meteorological Advisory Service, which relies heavily on NGOs to help provide a suite of climate services to smallholders, and Mali's Projet d'Assistance Agrometeorologique au Monde Rural, which has provided climate services to farmers since 1982. Preliminary findings show that the most effective climate services include a variety of approaches (e.g. posting advisories in public places, announcements over loudspeakers, enlisting NGOs and extension services to help communicate, translating advisories into local languages). CCAFS is currently studying how



Photo: K. Trautmann (CCAFS)

“Climate forecasts bring in new information to complement and extend farmers' knowledge.”

best to balance media and ICT approaches with face-to-face interactions.

Gender dimensions also matter. CCAFS work in India found that the use of climate information is higher in villages where women are fully involved as key partners in its production and delivery. Yet, reaching women and other marginalized groups is a particular challenge. Because these groups often cannot access productive inputs and have limited livelihood opportunities, they and their families can be heavily impacted by climate change. To respond to this challenge, a CCAFS project in Senegal is working with national and NGO partners to identify what women need in terms of climate services in order to reduce their vulnerability to flooding, droughts and other disasters. The training materials being developed by CCAFS for extension services and development NGOs will explicitly address equity challenges.

Learning from each other: South-South interactions

South-South interactions help to broaden efforts to provide effective climate services. A recent CCAFS workshop in Saly, Senegal (see Box) brought together participants from Africa and South Asia to share their experiences with climate services. Follow-up meetings have focused on building communities of practice around scaling up climate services in the two regions.

A number of CCAFS initiatives will ensure that these interactions continue, and enable farmers' organizations in different parts of the world to connect with each other, including through exchanges where farmers visit different countries to trade ideas.

To find out more about Climate Services for Farmers, please visit <http://ccafs.cgiar.org/climate-services-farmers>

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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