



# Early warning weather information, Senegal

## Introduction

Agriculture in Senegal is predominantly rain-fed and so erratic weather patterns present an ever-increasing risk to smallholder farmers across the country. Late onset of rain can lead to a reduced growing season; unexpected torrential rain and flash-flooding can lead to farmers losing scarce resources of seed, other farm inputs and labour together with the loss of topsoil, resulting in declining food security.

These climate change impacts also combine with socio-economic changes – population growth and competition for scarce resources – to provide challenges to any development strategy. Being able to anticipate climate fluctuations from a few days to a few months in advance can be decisive in allowing smallholder farmers to adapt their agricultural practices to compensate. Mamadou Fall of the Agence Nationale de l'Aviation Civile et de la Météorologie (ANACIM), Senegal's meteorology agency explains: *"The rainy season is supposed to start in May. But in 2016, some areas received up to 70mm of rainfall in April. Many farmers would have guessed that the rainy season had started early, and they would have prepared their fields and planted out their seeds. But then the rain stopped. It turned out to be a false start to the rainy season."* Seeds planted during that false start to the rains would have germinated but then lacked enough water to grow, meaning major losses for many farmers. Most farmers save just enough seed to get them through the year, or else buy new seed for planting.

During the initial two years of the Agroecology and Resilience Project implemented jointly by ActionAid and partners, evidence was gathered demonstrating reduced yields due to erratic rainfall. Vulnerability analysis with farmers identified that accurate and early weather information is essential for farmers to mitigate risk and practice effective adaptation measures. Short-term choices may be selection of appropriate seed varieties and timing of the sowing date and longer-term tactical choices of cropping systems can be made.

Information may be available both internationally and through national meteorological agencies but often the problem is the 'last mile', actually getting that information to the farmers who need it. A pilot project initially reaching 1000 smallholder farmers was designed to bridge that gap and also to enhance the quality of data held by the meteorological agency by supplying local information back to the agency.

## Description of the Agroecology system

In collaboration with the Agence Nationale de l'Aviation Civile et de la Météorologie (ANACIM), ActionAid decided to form a network of partners to disseminate climate information to enable farmers to better cope with the climate impacts that threaten their agricultural productivity.

40 smallholder farmers (20 of them women) from the Disaster Management Committees that had been established in an earlier phase of the Agroecology and Resilience Project across 25 communities in Kedougou, Niodior and Missirah regions were trained on interpreting weather information and making it available to their communities. Then as a pilot programme 12 smallholder farmers (7 of them women) in 12 communities across Tamba, Niodior and Kedougou were provided with further



training and equipment – a mobile phone, rain gauge, notebook and a notice board to provide daily weather information and early warning essential for smallholder farmers in their communities.

The system pioneered as part of this project provides accurate information to the community in a simple and accessible way. Every day in the run up to and during the rainy seasons, and at times of unusual weather, the government meteorological agency (ANACIM) calls the nominated person on the supplied mobile phone to let them know the weather forecast for the week to come.

The contact person then places marks next to simple graphics on a white panel in the middle of the village, indicating whether there will be rain, dry spells, storms, high winds, or risk of floods, bush fires, heat wave etc. They add information on the dates that the rains are expected to start or stop, and if the rains are expected to be heavy or light. This helps farmers to plan their activities and assess the best times for planting, maintaining and harvesting their crops, significantly reducing risk of losses from unpredictable weather patterns.

This approach is very easy to understand for farmers with low literacy levels, and more accessible than other approaches such as radio weather forecasts which may not reach everyone. This method really seems to overcome the challenges of other early warning systems that struggle to get the information down to the “last mile” to farmers on the ground.

During the rainy season, the contact person also measure daily rainfall collected in the rain gauge, kept in a convenient location. When ANACIM call, they share the daily data. This is helping ANACIM to get accurate rainfall information across the country, which will help the government to better understand changes in weather patterns, and to plan ahead for climate change.



Figure 1. Mbemba Sawane shows the weather information panel, the mobile phone and meteorology records he uses to communicate timely weather information to farmers in Sinthian village, Kedougou, Senegal.



Figure 2. Weather information board used to communicate key weather information for farmers



Fatou Keita, Secretary of the Bakho village women's group in Kedougou Region stated, "*I was selected by our village women's group to be the weather information contact person. I was given training, and ActionAid gave me a mobile phone to use for the project. Now I keep the rainfall gauge in my field next to the village and go to check it every day, recording the data in a book we were given.*

*"Whenever there is rainfall, or weather news to share with farmers, the representative from ANACIM calls me and we share information with each other. During the rainy season we speak every day. I tell them the rainfall measurements, and they tell me the weather information. Using a board marker, I just put an X next to the symbol for rain, sun, flood, wind, heatwave or fire.*

*"I also add the date of when the rainy season is expected to start or end. This helps people to know in case there is a false start or end to the rainy season."*



Figure 3. Fatou Kaita shows the rain gauge and information board she uses to communicate key weather information for farmers.

### Political space

As part of the wider Agroecology and Resilience Project that ActionAid is implementing in Senegal and The Gambia, ActionAid organized a meeting in December 2016 involving 30 participants from various organizations: National Platform for Biological Agriculture (FENAB), We Are the Solution, the Senegalese Social Forum (FSS), National Farmers Platform (CNCR), Prospective Institute for Rural Agriculture (IPAR), Fahamu, ENDA, PRONAT as well as government technical research services (ISRA), the national Meteorology Institute (ANACIM) and the regional rural development director (DRDR), FAO in Senegal.

The different participants agreed to come with an action plan to engage and influence work in favor of agroecology in order to make Senegal a hub on resilience based on the modeling of different experiences. Such engagements build awareness, trust and collaboration between governmental agencies and non-governmental agencies working to similar objectives.

Ismaila Diallo Forest Research Center ISRA commented, "*Through this workshop we have created a partnership, as ActionAid is an institution with useful experiences. All the agroecological practices that*



*they use have helped farmers to diversify their activities and generate income. We hope to continue building bridges so that we can work together to serve the people of Senegal.*

Mamadou Fall, ANACIM added, “*The information is in a format that is very simple and easy for farmers to understand, and everyone passing through the centre of the village can see it and pass on the news. I call the contact people every day during the rainy season and give them practical advice for the days ahead. If a storm is coming the farmers can avoid the field and plan other activities. If the rains will stop for a few days they can go into the fields and do weeding. And I can tell them when the rainy season will start, or whether there will be above or below average rainfall.*

*We at ANACIM need the information from the regions to build up a longer-term picture of how rainfall patterns are changing. The project is therefore very important for our understanding of how climate change is affecting Senegal, and we share this with the farmers. This collaboration with ActionAid has been fantastic for both our institute and the farmers. Long may it continue!*”

## Outcomes of the practices

The project is still in its early stages, and it will be particularly useful to hear peoples’ experiences once the rainy season has started (June-Oct17) and if there are unusual weather events. In particular, once the crops have been harvested (end of 2017) it will be possible to evaluate if and how the information has helped farmers to improve their yields and avoid losses.

However, the project is already showing positive outcomes. Focus group discussions with the women in the community shows they are particularly pleased to have access to up-to-date information which helps them plan activities and reduce their losses.

The piloting of the approach with the mobile phones and noticeboards has been very welcome and it is intended to extend to other communities in the future. Refinements are also required to allow for providing more than a single day’s forecast which will extend the usefulness of the information for critical decision making.

The women selected as contact people also value the project because they gain respect and status for being a key source of useful information that helps the whole community. Mamadou Fall from ANACIM said “*The women gain a lot of respect and status from bringing this information to the village, so there is motivation to stick with it. And because ActionAid has given the farmers the mobile phones, and I call them from the ANACIM office, the farmers do not bear any costs for getting the information.*”

## Message from farmer to farmers

*“I record the rainfall levels, and ANACIM give us the weather information which I mark on the board. It is very easy to use, and very helpful. Weather patterns have changed, and we are getting less water and lower harvests due to climate change. But with the right weather information we can adapt to these changes.”*

—Message from Founé Daniokho, treasurer for Medina Kenioto Women’s Group, Kedougou region