Role of mobile applications in collecting, documenting and disseminating integrated weather and climate forecasts for farmers: The case study of Ada East District in Ghana

GBANGOU Talardia

Wageningen University

Accra, Burkina Faso

Abstract

Many West African famers still struggle to cope with changing weather and climatic conditions that keep them from making optimum decisions and meeting food and income security. One of the latest way out strategies to overcome this situation suggests the provision of water information services by combining local forecasting knowledge (LFK) with recent improvement of scientific forecasts to create an integrated forecasting system which can be usable and useful even to small-scale farmers. Although scientific forecasts information are becoming widely available, the upscaling process of LFK, however, remains a challenge, as it involves interactive exchange with localized communities. This paper describes a process by which a user-friendly android mobile application can be applied for collection and documentation of LFK, and dissemination of integrated forecasts. The case of Ada East district in Ghana was considered. We used (i) in-depth interviews to understand the structure of LFK and assess farmers' forecasts information needs associated with their cropping calendar decisions, and (ii) the user-driven design approach to design an android application and test the upscaling and uptake of integrated forecasts by farmers. The results show that LFK indicators are diverse, falling mostly within weather timescale of 2 weeks and require to be complemented with scientific forecasts for longer timescale. Leaving out the affordability of android phones, even low-literate farmers could understand and co-produce forecast information using the mobile application, provided that it has basic features, such as voice message in local dialect, and consensual visualizations.

Keywords: Android application, integrated forecasts, upscaling, uptake.

Are Modern and Indigenous Seasonal Climate Forecasts Complementary or Substitutable? Evidence from Republic of Benin

Cocou Jaures Amegnaglo,

Department of Agricultural Economics and Agribusiness, University of Ghana, Legon

Faculté des Sciences Economiques et de Gestion, Université d'Abomey Calavi, Benin

Abstract:

Information is a cornerstone for today's agriculture in the context of climate change and globalization. The Need of information is urge in developing countries and in the agricultural sector specifically. One of the highly needed information by farmers is climate forecasts. Policymakers tried since three decades to introduce modern seasonal climate forecasts in Africa with mitigated results. One of the causes of the low adoption and use of modern seasonal climate forecast is the presence of indigenous seasonal climate forecasts. Therefore this study assessed the relationships (complementarity or substitutability) between modern and indigenous seasonal climate forecasts in Republic of Benin based on a random survey farmers. To achieve this objective, descriptive statistics, endogenous switching regression and a two-step Heckman models were used. The analysis showed that most farmers used indigenous climate knowledge to design their agricultural operations. The use of indigenous information contributed to the increase of yield through efficient management of key inputs. Despite the usefulness of indigenous forecasts, farmers revealed that these forecasts are characterised by decreasing accuracy trend. Majority of farmers are willing to pay for modern seasonal climate forecasts, found to be more accurate than the indigenous ones. Furthermore, the study found that the use of indigenous seasonal climate forecasts does not influence significantly the use of modern forecasts. This result suggested that policies can be taken to connect indigenous and scientific climate services with the aim of delivering more accurate and reliable information to a majority of farmers on time.

User-driven hydro-meteorological information services for adaptive decision-making in peri-urban delta farming, Ghana

Rebecca Sarku

Climate scientist/academics

Wageningen University/University for Development Studies

Accra, Ghana

Abstract

Access to water for peri-urban farming in the urbanizing deltas of the Greater Accra Region in Ghana is vital. In this region, the interrelated developments of rapid urbanization and climate change are increasingly affecting water availability. To cope with these uncertain changes, farmers are challenged towards more adaptive decision-making. This requires an enabling information and governance system. However, existing hydro-meteorological information services are often inadequate to support water-related decisions of farmers about crop varieties, land preparation, irrigation or fertilizer applications. In general, the design choices of hydro-meteorological information services are strongly science-driven and thus not easily comprehended by farmers. This study

aims to increase our understanding of how hydro-meteorological information can be made more actionable for farmers and other actors. It addresses the question: How do actors make design choices about hydro-meteorological information services that can result in actionable knowledge for adaptive decision-making in peri-urban farming? Adaptive governance theory serves as an overarching theory that enables ideas of environmental virtual observatories (EVO), actionable knowledge, and adaptive decision-making theory to be operationalised for the development of a user-driven hydro-meteorological information services in a real-life action research.

Localizing climate services for agricultural productivity and food security in Uganda

Mwangu Alex Ronald

Kabale University

Kabale, Uganda

Abstract

Climate change is real in Uganda. Its' effects are raising concerns among the policy makers and the local community. This has created demand for climate information services more than ever before. The Uganda National Meteorological Authority generates and delivers climate information services i.e. weather forecasts and early warnings through newspaper supplements and other mediums. The information is provided in a scientific way and many of the farmers cannot understand it. The dissemination methods are not accessible to the majority of the farmers. The farmers who rely on weather controlled agriculture face challenges as they continue to practice agriculture lacking up-to-date climate information. The indigenous knowledge on season forecasting they rely on is no longer accurate. The farmers cannot make climate sensitive decisions prior to planting and harvesting. They allocate farm land and household labour, planting materials/seeds , production inputs without information in the end making loses that has resulted into low yields and resultant food insecurity. There is need to localize the climate information services, indigenous languages should be used and indigenous knowledge systems on weather forecasting should be updated and integrated in climate services. The government should demarcate climate/ecological/agriculture zones across the country to effectively generate and provide relevant climate information on suitable crops to be grown in specific zones and the right planting seasons. The local communities i.e. men, women and youth should be included in generating and disseminating climate information. This will help improve agriculture productivity, food security, nutrition, household income and the national GDP.

How to make climate information services innovations more useful to farmers in sub Sahara Africa

Mkpado Mmaduabuchukwu

Department of Agricultural Economics and Extension

Federal University Oye- Ekiti, Nigeria

Abstract

Farmers required concise information that will enable them to take definite action. Information on climate and weather variability may be given out fortnightly or weekly. The issue is giving weather variability information in such a way that facts will be succinct to enable famers' plan for and take specific actions to improve agriculture and food security. The first step is the registration of farmers in such a way that farmers will be identified in a given geographical location called 'micro climate'. The massage to be sent to the farmers in a location possibly via their tabs or e-mails will be such that farmers will know the time rain can start and its duration, will it be intermittent or continuous or widespread; the intensity of the rain and sunlight, and also nature of wind. For example with respect to rainfall intensity it can be: drizzle or low or moderate or high or very high (hailstorm). Similar trend will be required for sunlight and wind. To enable farmers plan ahead, there is need for advance information on climatic and weather variables such that farmers will know the time of onset and end of rains, a measure of its variability within a month, two months, etc. This will help farmers to plan early and late planting seasons and operations for certain crops like maize, tomatoes and legumes. It is very important due to lack of irrigation facilities to majority of farmers. It will also be useful in planning harvesting and processing activities. This stylized climatic and weather facts and information will be also very useful to fishermen and pastoralists.

Keywords: Innovation Platform, Weather Information, Agriculture & Food Security, Africa.

Prototype Local CIS Weather Station for Simplifying Climate Information for Community Farmers, Youths and Women in Agriculture

By Tabi Joda

SuccezGuide

Abstract

Agriculture and food security, water, energy, infrastructure, and health are already sensitive to weather related shocks. Rising temperatures, changing rainfall patterns and climate-related disasters (especially floods and droughts) will erode gains in poverty reduction and set back economic development, recoded over the decades, ACPC - UNECA, 2016. Agriculture for example contributes to about 30 per cent of GDP and

employs over 80 percent of the population. Climate observing systems show that rainfall in Africa is increasingly erratic and stands to be hardest hit by climate variability and change giving that 90 percent of our Agriculture is rainfed. Climate information services from the Met Agencies are increasingly being positioned to support resilience planning and mitigate climate impacts for climate vulnerable users that include farmers, pastoralists, fishermen and urban communities.

When a local population poised with indigenous knowledge has limited access to and still finds scientific machines like met services machines and their results as strange and abstract, what way can we simplify and combine both the indigenous and scientific knowledge in CIS and make it useful to the people who need it most – farmers? This innovation is aimed at using both indigenous and scientific methods in CIS and add value to ongoing interventions by facilitating community access and trust in climate

information services (CIS) through simplified people-centered method, that yet improves the CIS value chain.