



AGRICULTURE AND FOOD AUTHORITY

REPORT ON INNOVATIONS IDENTIFIED

AT

AGRICULTURAL SOCIETY OF KENYA

KISUMU REGIONAL SHOW 2019

21st - 28th July 2019

Introduction

Innovation is the process of translating an idea or invention into a good or service that creates value or for customers. It may involve deliberate application of information, imagination and initiative in deriving greater or different values from resources, and includes all processes by which new ideas are generated and converted into useful products. To an idea/invention to qualify as an innovation, it must be replicable at an economical cost and must satisfy a specific need.

Kisumu Agricultural Show Identified Innovation

Crop Monitoring Service

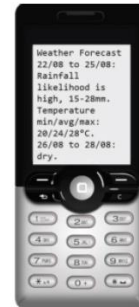
One of the key challenges facing cultivation of scheduled crops is low production and productivity arising out of poor agronomic practices. To circumvent this challenge, the Crop Monitoring (CropMon) service provides the farmer with local information on weather forecasts, current crop growth and how crop growth can be influenced by adjusting farm management practices.

AgroCares is the lead partner of the CropMon project that is funded by the Geodata for Agriculture and Water (G4AW) facility. Other partners in the project are *Dutch Partners* Sprigg, NEO, Weather Impact and *Kenyan Partners* Cereal Growers Association (CGA), Coffee Management Services (CMS), Equity Group Foundation (EGF), Sugar Research Institute (SRI) and SoilCares Ltd. AgroCares has been working on this project for the past four years in Kenya. The weather forecast service offered by CROPMON is combined with a field specific crop growth and crop health assessment using satellite data and a tailored farm management advice.

Methodology - Using remote sensing to produce weather forecasts. The fields of farmers need to be georeferenced. It means there is a linkage between the information captured on the fields to a geographic coordinate system. This is necessary to associate the field information to other data, such as remote sensing data and weather data provided by the project respective partners NEO and Weather Impact.

Crop Performance Monitoring

Weather Impact is a global weather company, specialized in the risks of extreme weather and climate change. It has partnered in the CropMon project to develop a service that advises farmers, farmer organizations and other stakeholders in Kenya. Weather Impact delivers the weather forecasts and monitors current weather conditions for this service. Farmers receive text messages (SMS) on a regular basis, for farmer organizations and other stakeholder's smart phone and web applications



Source: Weather Impact

have been developed. Most farmers have a feature phone and can receive SMS. Therefore, a way to reach them is to send weather forecasts directly on their phone via SMS. SMS messaging is the best way to reach smallholder farmers who do not have access to the internet.

Satellite, weather and field soil data are combined to monitor the status of crop growth. If satellite observations deviate from reference values, the cause of the deviation or the factor that is limiting to crop growth is ascertained. From this information, an advice is given to improve crop growth. The advice ranges from crop or soil management, crop rotation for the following season, irrigation/run off remediation to use of fertilizers or pesticides. The service is constantly improving, by using farmers' feedback and collected data.

Target user group

The project focuses on farmers and their crops: coffee, maize, wheat, grass (fodder) and sugarcane in the southwestern part of Kenya. The project scope covers 27 counties that include Bomet, Busia, Bungoma, Elgeyo-Marakwet, Embu, Kakamega, Kericho, Kiambu, Kitui, Kirinyaga, Kisii, Kisumu, Machakos, Meru, Migori, Muranga, Nandi, Nakuru, Narok, Nyamira, Nyandarua, Nyeri, Siaya, Tharaka-Nithi, Trans-Nzoia, Uasin Gishu and Vihiga. The project has over 193,000 farmers subscribed to the CROPMON information service to date. Once successfully established for these target crops and areas, the information service will be implemented for other crop types, as well as in other counties and countries in the years following the project period.

Benefit of CropMon

- Farmers can greatly benefit from geodata. It can bring a direct benefit through better predictions of the start of the rainy season, but it can also be used as a tool to gain access to additional resources. For example, many remote farmers in East Africa do not

have access to loans to buy fertilizers or crop insurance. Simply because until now it is hard for banks or insurance companies to predict the performance of a crop in a remote area, and therefore assess the risk to lend money or insure a crop. However, the use of geodata can solve this problem.

- Providing farmers with a crop performance report. Farmers subscribed to the CROPMON service currently receive two SMS messages per week. The first SMS is a weather forecast for the next 7 days that contains predictions and likelihoods for rainfall and temperatures. In the second SMS the farmer gets a crop specific performance report of his field with the explaining factors of the performance when available.
- Using satellite data, one can identify two main factors (lack of nitrogen and water) to explain crop underperformance. Chlorophyll is responsible for the green color of the plant. If a crop suffers from a lack of nitrogen, it triggers a low content of chlorophyll which results in an overall change of color of the plant. This change can be detected thanks to remote sensing.

Outlook for the future

In the future the impacts of climate change will be on the increase, but so will the opportunities for agriculture to be more resilient and for farmers to be less vulnerable to the changing climate. There is a lot of potential for yield increase in Africa. Remote sensing and geodata will play a big role in the development of a new way of farming.

AFA Potential Areas of collaboration

Market linkages: Partner with the CropMon Senior Officer, Mr Peter Mwangi 0722602145 pmwangi78@gmail.com to bring to the attention of County Government the existence of the service and train and register farmers through the counties on the Crop Monitoring Service.

There is also need to subscribe to the service to enable AFA make appropriate decisions and offer timely advice on the likely production scenario across scheduled crops.