Food and Agriculture Organization of the United Nations

private sector

FAO partnerships

working for the Sustainable Development Goals

SMART AGRO 4.0

In collaboration with Telefónica, one of the largest telecommunications companies in the world by market capitalization and number of customers, which is supported by a comprehensive offer and the quality of connectivity that the best fixed, mobile and broadband networks. With 345 million accesses, Telefónica has a strong presence in Spain, Europe and Latin America, where most of its growth strategy is concentrated. Telefónica is a totally private company with more than 1.5 million direct shareholders

Timeframe
2018–2020

Beneficiaries
Small farmers

Geographical coverage
Colombia, El Salvador and Peru

Contributing to:

Smallholder farming is the predominant sector in the rural economy of Latin America, producing more than 60 percent of the basic food supply in many countries (CEPAL, FAO and IICA, 2014). Besides playing a central role in national food security and nutrition, smallholder farming also represents an important source of rural employment.

CHALLENGE

As most of the small farmers depend on rain-fed agriculture they are highly vulnerable to the changing patterns of water availability and precipitations related to climate change and they lack access to technical or financial support that could help them invest in more climate-resilient agriculture. Setting up innovative irrigation water management (irrigation, drainage and water conservation and control) helps achieve stability of crop production by maintaining soil conditions close to optimum for crop growth, contributing to the mitigation of negative issues related to climate change.

THE PARTNERSHIP

To address this challenge, Food and Agricultural Organization of the United Nations (FAO) and Telefónica have signed a partnership to promote sustainable agricultural practices by developing and implementing innovative technologies, digitization and data analysis initiatives in the agricultural sector. The partnership places special emphasis on supporting agricultural communities in accessing information that will help them use water resources more efficiently as well as prepare and strengthen them in the face of extreme weather events related to climate change.

The agreement foresees three main areas of work, namely the application of Internet of things (IoT) and Big Data to the agricultural sector to optimize processes and make the use of natural resources more efficient and digital education and capacity building.

ACTIVITIES

After preliminary assessments to determine priority crops and suitable geographical zones for the development of water efficiency solutions, FAO and Telefónica have been implementing a pilot project that applies a new IoT tool on Smart Agro, developed by Telefónica through its I&D Center operating from Chile. The tool functions as an integrated monitoring, control and prediction system or agronomic variables through the use of water sensors coupled with artificial intelligence and specialized mathematical model.

The pilot is running in specific communities in Colombia involving the production of potatoes and coffee, Peru in the cotton sector and El Salvador involving several types of crops.

The project activities foresee the installation by Telefónica of different types of equipment and hardware such as a kit of three digital tensiometers (20, 40 and 70 cm deep respectively), soil moisture sensors FDR (10–20–40–60–80–100 cm) and automated weather stations. The data collected through the equipment along with the trial pits validation and the online Irribook service, allow the Telefónica agronomist, in conjunction with FAO experts, to identify the critical points of soil moisture for each type of crop and provide – on a weekly basis – irrigation recommendations that helps farmers to improve irrigation efficiency, increase the productive potential and profitability of the crop. As the equipment is connected through the 5MB data plans of Telefónica Movistar, data on soil moisture and local weather are available to farmers in real-time. While Telefónica provides the technological instruments for water efficiency improvement, FAO's role consists in technically supporting farmers by defining the crops and farms suitable for the pilots through trial plots and delivering the technology transfer process through training and accompaniment and product customization reflecting the local agro ecological conditions.


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Knowing when to irrigate for small producers like us is something new, because we have always irrigated as our fathers taught us. Through this new tool, we have learned how and when to irrigate: by making a pit to check the soil humidity and roots' length and by combining this with the data provided by the expert, we know how much water the plants need. I am grateful to the support of this project and to Telefónica that placed this equipment on my plot, where I have managed to have smaller and uniform plants and higher yields.

Justo Córdova, cotton producer and president of the agriculture services cooperative Fermín Tanguis.

PRELIMINARY RESULTS

Preliminary results from Peru show that in 2018–2019, cotton yields increased by 77 percent in Pisco (department of Ica) and 72 percent in Muy Finca (department of Lambayeque) compared with neighbouring plots with no technological irrigation system in place.

In Colombia, farmers using the technology observed that potato yields (50kg / ha package), increased from 600 for production without irrigation technology applied, to 1 200 where irrigation systems were technologically enhanced and recommendations provided by the technological platform. The application of Telefónica's technology has also brought about a decrease of the unit production costs (50kg / ha package) by nearly 44 percent, as well as an increase of potatoes quality, which allowed to obtain an additional $COL 5 000 per package sold.

The pilot, data analysis and accompanying support from the FAO and Telefónica teams will run until December 2020. The data collected will be used in further research projects and will be shared with policy-makers to facilitate evidence-informed policy development towards SDG implementation and promote the use of more efficient and effective solutions in the use of natural resources.

SUSTAINABILITY

Farmers and members of the Direcciones Regionales Agrícolas are currently receiving technical training on how to read the data generated by the equipment. Telefónica is currently planning to develop a new tool called Optimalcrops that will be able to provide self-generated recommendations that do not need agronomists' analyses. Optimalcrops will work through algorithms designed and developed thanks to years of agronomic knowledge combined with IoT/ BIG DATA that will progressively improve productions through continuous Artificial Intelligence learning.

CONTACT

FAO-Partnerships@fao.org