

A new irrigation technology is expected to help Rwandan farmers manage water resources more efficiently and remotely, enabling them to become more climate resilient while producing higher-quality crops with fewer resources and less effort.

The technology, dubbed 'Crop Guard', was developed by Farmoja, one of the beneficiaries of the Innovation Challenge Fund (ICF) supported by the Commercialization and De-Risking for Agricultural Transformation Project (CDAT), implemented by the Rwanda Agriculture and Animal Resources Development Board (RAB) in partnership with the Ministry of ICT and Innovation through the Hanga Pitch Fest.

The CDAT Innovation Challenge Fund is a strategic intervention aimed at transforming Rwanda's agri-food sector through youth-led innovation. The initiative was established to promote technology-driven solutions in agriculture by supporting innovative projects capable of addressing key challenges across agricultural value chains.

Through the program, young innovators from across the country presented transformative solutions focused on improving agricultural productivity, post-harvest handling, irrigation, mechanization, processing, market systems, and digital agriculture.

The fund has provided technical and financial support to enterprises and service providers with high-potential solutions aligned with the objectives of the CDAT project.

To date, the ICF portfolio comprises 10 projects actively addressing critical bottlenecks in agricultural productivity and market access. The initiative has already recorded significant achievements, including reaching more than 10,000 farmers, supporting 2,246 farmers in adopting innovative technologies, and creating 126 jobs, 46 percent of which are occupied by women.

In addition, 90 percent of supported enterprises are youth-led, while 30 percent are women-led.



*Mugambira Bonfils, Access to Finance Specialist at the RAB Single Project Implementation Unit (SPIU)*

According to Mugambira Bonfils, Access to Finance Specialist at the RAB Single Project Implementation Unit (SPIU), the winners of the Hanga Pitch Fest competition who received CDAT funding were selected because of their potential to transform Rwanda's agriculture and livestock sectors, whose modernization is central to the country's ambition of becoming a middle-income economy by 2030.

The Crop Guard system received more than Rwf70 million in funding. It is built on precision irrigation technology that utilizes Internet of Things (IoT) devices and taps into the abundant water resources of the Akagera River.

In drought-stricken Nyagatare District and neighboring areas, the innovation could provide an important climate adaptation solution. According to Farmoja founder and CEO Bruce Mutangana, farmers often struggle to manually fetch water for irrigation, while determining the exact amount of water required in the soil remains a challenge.

### **How the Technology Works**

The system uses solar-powered pumps to draw water into a reservoir, which is connected to a pumping station and valve controllers. Through sensors installed in the field, the entire process is managed remotely using a digital dashboard that controls the amount of water entering the soil based on moisture and temperature levels.

Mutangana said the company collects and analyzes soil temperature and moisture data to determine the appropriate irrigation requirements for each plot.

"This can be done remotely and helps farmer to produce high quality food for better market prices, remain climate resilient but also make work easy on antime spent in the farm and use few resources thus our slogan-grow more with less," Mutangana explained.



The technology enables precision agriculture, reducing water loss for farmers, particularly in dry regions where water rationing is managed by water user associations. Rwanda currently has just over 100 water associations serving more than 300 marshlands across the country.

The IoT-based solution is currently being piloted at the Gabiro Agribusiness Hub

(GAH) Ltd, one of Rwanda's flagship agricultural transformation centers. Data has been collected over the past six months from six demonstration plots growing different crops.

At this stage, the technology provider is focusing on data collection through sensors, irrigation scheduling, and technical support for manual valve operations.

David Kiiza, Chief Operations Officer of GAH Ltd, said the service is particularly valuable because it provides data that could improve current irrigation practices and water management on the hub's 113 hectares of demonstration farms, which are intended to transform crop cultivation and livestock production.

"We have only been able to determine data on wetness and dryness of land, but now we are waiting for this precise data and results of this pilot test to be presented to us, so that we can scale it up," Kiiza said during a media on-site tour on June 16, 2026.

Kiiza said that if the pilot proves successful, GAH would consider contracting Farmoja to monitor additional factors affecting crop production, including soil pH levels and nutrient content.

"Why should we be contracting other service providers and use technology from outside Rwanda if we can have the same data delivered locally. If this is a workable solution, we will certainly enrol for this service," Kiiza said.

Mutangana said Farmoja already has the technical capacity to capture all these indicators. However, additional funding will be required to scale the technology nationwide, reach more farmers, and attract investors, particularly banks and insurance companies that depend on reliable agricultural data to support financing and risk management decisions.

Janvier Ahimanishyize, the ICF Consultant, said the technology has strong potential for expansion and that the data being collected could play a critical role in improving agricultural productivity across Rwanda.

With continued support from the Innovation Challenge Fund, he noted, solutions such as Crop Guard could accelerate the adoption of smart agriculture technologies and help farmers become more resilient to climate change while increasing yields and profitability.