



Cranfield University - Improving banana irrigation management, productivity and livelihoods for smallholders in Colombia

Delta-T Devices products used:

SM150T Soil Moisture Sensor, WS-GP2 Weather Station, GP2 Advanced Data Logger

The Cranfield University Project

Banana is one of the most valuable global agricultural commodities, and for some countries such as Colombia it is a critical source of export income. Nearly three quarters of all bananas consumed in Europe are imported from Colombia.

Production is underpinned by a combination of large commercial plantations and smallholders. The plantations rely on major infrastructural investments and a high dependence on fertilizer, pesticide and irrigation. In contrast, the smallholders often cultivate bananas with minimal inputs. However, water stress (due to increasing rainfall variability) and competition for water resources are emerging as major production constraints for both commercial and smallholder production.

The university's aim is to develop and deliver an affordable irrigation scheduling service to improve banana yields and quality, to raise levels of irrigation knowledge and to reduce environmental impacts associated with over-irrigation.

One of the major project challenges has been gathering locally relevant soils, agroclimate and crop information to support the development of a robust irrigation planning tool - and this is where the involvement of Delta-T Devices has been important.

Delta-T Devices's involvement

Professor Jerry Knox of Cranfield University's **Cranfield Water Science Institute** explains how Delta-T Devices's equipment and technical support is playing an important part in the project:

"Working with Delta-T Devices, we installed two arrays of SM150T soil moisture sensors at varying depths - in selected well-managed plantations in the Santa Marta region of Colombia."



Niranjan Panigrahi and Professor Jerry Knox

As part of an 18 month project funded by Innovate UK, researchers at Cranfield University are working with UK and Colombian partners to help improve the productivity and livelihoods of banana producers in the Magdalena region.



SM150T Soil Moisture Sensors

He continues, “We also installed a WS-GP2 Automatic Weather Station (based around the GP2 Data Logger) to provide input data to drive our irrigation model - as there is limited agrometeorological recording in the region.”



WS-GP2 Weather Station

Professor Knox explains that, “Banana plantations in the tropics are notoriously hostile places for conducting experimental research, so any equipment needs to be able to withstand high ranges in humidity and temperature as well as being robust to in-field agronomy practices.

Conducting fieldwork in Colombia has been quite a challenge, but very rewarding – it has highlighted two fundamental issues. Firstly, the need to have a trusted local partner who can provide day to day technical oversight in-field, and secondly, equipment that you completely trust to record the data you need.

A further important requirement is solid technical backup when challenges arise. When you are running out of time (and daylight) in a remote banana field it is reassuring that someone at Delta-T Devices responds so quickly to our technical questions.”

Professor Knox concludes by saying,

“The Delta-T Devices kit has been first class - it has not missed a beat since we installed the equipment. We now plan to leave the SM150T sensors in-situ after the project to continue developing our understanding of the soil-water fluxes under banana crops.”



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