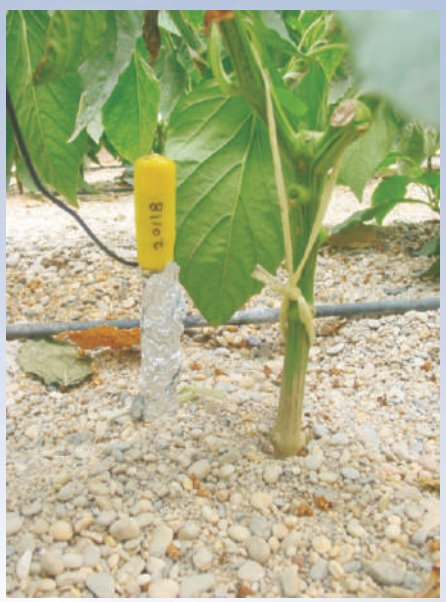
Case Study: Tensiometers and Irrigation Management



In Almeria, in SE Spain, the largest concentration of greenhouses in the world grows various vegetable crops, mostly tomato, pepper, melon, cucumber, eggplant, zuccini in simple plastic greenhouses. Being an arid area, on the side of Europe's only desert, water resources are limited. Therefore, the efficient use of irrigation water is a vital issue. As 80% of cropping takes place in soil, optimal water use can only be achieved through irrigation techniques and management. Whilst the widespread adoption of drip irrigation has improved on-farm water use efficiency, irrigation management is still based on experience.

Rodney Thompson and Marisa Gallardo from the University of Almeria and Maria-Dolores Fernandez from the Estacion Experimental "Las Palmerillas" in Almeria have been conducting a research program into the use of soil moisture sensors for irrigation management in this agricultural system. "Individual greenhouses and farmers crop management practices vary considerably, this technology enables irrigation to be tailored to the individual characteristics of each crop" commented Dr. Thompson.

Skye tensiometers have been used as a reference for work in evaluating and developing irrigation management protocols for capacitance sensors. The continuously monitored tensiometers enable periods of under and over-irrigation to be readily identified. "Also, because their measurements are not affected by soil salinity, they enable us to identify when changes in soil salinity affect the calibration of the capacitance sensors" added Dr. Thompson.

The Skye tensiometers have also been used as a reference to evaluate calibrations and the performance of a granular matrix sensor. This has enabled the evaluation and re-parameterisation of published equations, the development of an in-situ calibration and various observations about the behaviour of the granular matrix sensor. As a result, local farmers have calibrations appropriate to their soils and cropping conditions and useful information to fully understand the data provided by the granular matrix sensor.

The Equipment

Skye tensiometers can be manufactured to almost any length! For long lengths acrylic tubing is not very suitable so we use a different type of plastic. Electronic tensiometers can be supplied wire-ended for connection to other company's equipment or with plugs for the Skye DataHog. DataHog2 has inputs for 8 tensiometers. Other tensiometers in our range are: mini tensiometers for plant pots; dial gauge; and septum type. Further details at: www.skyeinstruments.com/tensio.htm

Acknowledgements and Contacts

We would like to thank Rod Thompson for supplying us with a case study.

Skye Instruments Ltd
21, Ddole Enterprise Park, Llandrindod Wells, Powys LD1 6DF, United Kingdom
TEL: +44 (0)1597 824811 EMAIL: skyemail@skyeinstruments.com WEB: www.skyeinstruments.com