

'Important to know what's going on in the slabs'



Daily measurements of the slab by hand meter give essential information on what is going on in the slabs. This is important to confirm the readings of any fixed sensors and to show the standard deviation across the glasshouse. This data will give more potential control over the crop to increase yield and quality as well as more efficient use of water and fertilisers. The substrate manufacturer Saint-Gobain Cultilene has developed measuring protocols to standardize the way of measuring and to turn it into a procedure.

Glasshouse crop production uses a large amount of water. In the future this has to change as water is becoming increasingly scarce in some countries and more expensive. More efficiency in the use of fertilisers and a reduction in emissions is also becoming legislation. To reduce water and fertilizer use to the substrate needs good management to avoid problems stresses growing specialist Kim Harding from Cultilene. "There should be target levels for water content, ec and drain % for the crop, but also it is important to monitor the standard deviation in these figures around the glasshouse"

Hand Held Meter

Knowledge and data are important. It is important that growers know exactly what is going on in the root zone. Using

the substrate is becoming more and more important for controlling the balance of the plant. Standard deviation around the glasshouse is also important to monitor to maximise the potential from every plant in the glasshouse. More and more growers are using fixed sensors and weigh scales to monitor the changes in the root zone to control plant balance. This is an important tool for controlling the irrigation strategy so it is vital to be sure that these measurements which come from a small sample of slabs are giving a representative reading for the whole of the glasshouse. Hand held meters for measuring water content, ec and temperature have been used in the industry for many years but not in a constructive way to measure, store and use the data produced. The measurement protocols are a procedure

for measuring and storing the data by technicians to be used by the grower to help him make accurate decisions on watering strategy.

As part of the Cultilene Framework (a system for getting the best out of Cultilene substrates) Cultilene has developed 3 different protocols for measuring slabs using a hand held meter. A standard protocol that provides quick and simple insight into the water content and EC of a slab, a more advanced protocol which can be used to reveal more detailed information and a Deluxe measurement, which provides highly detailed information. "The last measurement is usually carried out by growing advisors or Cultilene's advisors to show the water and ec distribution in the slab as a profile." By standardising the way of measuring, according to Harding it no longer matters who carries it out: measuring is always performed in the same way. "The data, which should preferably be processed in an excel sheet, can be used to determine the crop strategy. The data collected also gives a good insight into the developments during growing and can be viewed again in the future. The grower can use the conclusions and insight to optimise the growing strategy and water in a more targeted way, in order to achieve the target moisture and nutrient levels."

A grower who knows what is going on in his substrate can be more efficient and therefore save water and fertiliser. "The grower can also control and manage the crop better and keep the root zone

Cultilene Framework measurement protocols

- 1. Simple vertical measurement
 - WC and EC measurements are carried out in at least four substrate mats, in representative parts of the greenhouse.
 - Measurements are carried out daily, always at the same time and results are recorded.
 - No measurements of mats at unusual locations (e.g. end of the row)
 - Intensive measurement in critical periods (of tomatoes during the period after planting, for example)
- 2. Horizontal measurement
 - Three horizontal measurements in the mat; in the top layer, middle layer and bottom layer. The measurements are spread evenly throughout the height of the mat here.
 - Not only the WC and EC but also the distribution of these is looked at. The variation should not be too large.
- 3. Deluxe measurement
 - Horizontal measurements in which the water content, temperature and EC in the mats are measured. These measurements are carried out across the entire length of the mat.
 - A limited number of mats are looked at in great detail. The WC and EC distribution in the mat are looked at here too. This measurement is very suitable for comparing mats or for a detailed analysis of the irrigation strategy.

under better control. This results in better quality and yield. Small corrections can be made more frequently. Prevention is better than cure in horticulture too!"

Promising results

Around fifty growers are now using the principles of the Cultilene Framework and this group is growing steadily. Harding believes the results are promising. "Growers who use the Framework principles on our substrates have better control of the root system, the differences in moisture and nutrient values between the slabs are smaller and the fruit is more uniform. There is also better root distribution and oxygen supply, which is particularly important during critical growing periods. Working according to the Framework principles helps to further optimise the use of Cultilene stone-wool slabs, from the very beginning to the end of the cultivation."

