

PRECISION GROWING IS ABOUT MORE THAN JUST WATER AND NUTRIENTS

By: Erik van Os, Wageningen UR Greenhouse Horticulture

Precision growing is not only a matter of optimising the supply of water and nutrients. It is the next step to a better control of growth and production and to an emission-free production method. This new strategy was explained by Grodan, while Priva showcased how it might be realised using a process computer.

What is the best watering strategy and how can it be realised? Andrew Lee, crop consultant at Grodan, showed clearly that in a fibrous substrate such as stone wool the water content is the main strategic factor for controlling input and output. Hein Jasperse of Priva demonstrated how to realise this strategy on the process computer. The settings of parameters such as the start & stop moments of the day, the frequency of watering and the irrigation length have different influences on the water content of the substrate and, consequently, on the EC and the vegetative and generative growth of the crop.

Less emission

The hydrophillic fibres from Grodan offer easy availability and uptake of water and nutrients. The pF-curve used in soils is not a suitable parameter to measure the water contents. It is better to measure it directly with a sensor, which also measures EC and temperature. Productivity has doubled over the last ten years, and one of the reasons for this is an improved generative steering of the EC while emissions of drainage water decreased and uniformity in the slab increased. In an open system for tomatoes it was estimated that 945 kg N (nitrogen) per hectare was emitted, while in a closed system with 85% reuse and 30% drainage, only 142 kg N per hectare was emitted. Further lowering of the drainage to 15% enables a further N emission reduction to 71 kg per hectare. Although the EU Water Framework Directive currently permits an emission of 125 kg N per hectare, this will have to be reduced to below 70 kg N within a few years. Adequate watering realises only 10% direct drainage, 70% refreshment in the slab and 20% resaturation.

The right EC in the slab

More generative growth is realised by steering the EC in the slab. The time chosen to start and stop watering each day has a major influence, while the frequency and irrigation length have less impact. Growers can influence the water content and, consequently, the EC by experimenting with the irrigation schedule on the computer. Once they are familiar with the setting of the parameters, significant steps can be taken.

Conclusion

Precision growing enables growers to steer the water contents in fibrous slabs and, consequently, to manipulate EC for generative growth, production and emissions.

Partners in this HortiSeminar: Grodan, Priva