

## WATER

# AUTOMATION

How Precision Growing helps reduce nutrient losses

By Chris Blok, Wageningen UR Greenhouse Horticulture

Water use and emission restrictions in horticulture can be significantly improved worldwide. Precision Growing is a form of cultivation in which water, nutrients, crop protection products, energy and space are used efficiently. The method is matching the best available technology to keep water and nutrients within the cultivation system.

Suppliers Grodan and Priva have gained experience with such systems in the past years. They claim that, thanks to Precision Growing, Dutch industry can already comply with the Water Framework Directive, which will come in to force in 2027.



### Three levels

Horticultural companies can improve water management on three levels, according to Grodan.

Step 1 is to start with the best possible materials:

- » water with the lowest possible sodium concentration to restrict drainage
- » sufficiently large basins, and drainage water storage
- » an inert and homogeneous substrate
- » an accurate trickle system
- » correctly placed drainage holes are required for substrate cultivation systems.

The main consideration is that slab water content and EC be accurately maintained at the desired values, with very low drainage amounts and virtually no discharge.

Step 2 is the use of properly positioned measuring systems for water and nutrient control. Graphic control via climate computers can keep water content and EC at previously set day/night ranges, even under widely varying climate conditions. The main principles of this strategy include;

- » a correct start and stop time
- » EC-radiation combinations
- » planned water content fluctuations.

Step 3 is to develop knowledge-based water/nutrient management activities, which requires knowledge exchange, research and support by consultants. This makes it possible to expand the method of operation with strategies for crop growth control.

### Control

The right equipment and control programmes are needed to enable accurate control and dosing of water and nutrients. Priva is supporting growers in this. Adequate water management starts with water pre-treatment, pH neutralisation and UV disinfection. Processes have to be safeguarded as well as controlled, for instance by using flow protection. There are also various dosing installations available for the dynamic mixing of incoming water types and drainage water, along with the subsequent addition of nutrients to the final water.

Computer-based control programmes manage the interacting processes. For Precision Growing, Priva has added extra features to its computer programmes to allow growers to structure their water and nutrient management decisions. This enables growers to realise their own water management strategy and to keep an eye on every aspect of the operation.

Partner in this seminar: Horti Alliance