GROW-HOW!

van der Knaap®

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rooting / growing solutions

# Forteco scale: to measure is to know!

**Forteco coco substrate slabs are substrate slabs with a high air-holding capacity and good drainage. Therefore, coco substrate slabs must be watered with a sufficient number of small watering sessions. How the water is administered is crucial for good crop results. To gain a better understanding of the irrigation strategy and to be able to make proper adjustments, Forteco developed its own weighing scale in 2008. A new version of this weighing scale will be introduced in the spring of 2019.**

The weighing scale can be used to monitor the weight of Forteco coco substrate slabs per minute. The measurement data is stored locally in a 'logger' and sent to a secure 'cloud' via a wireless connection. If this connection is lost, the data is saved and sent later, when the connection is re-established. The logger is continuously connected to the weighing scale and also runs on batteries in case of a power failure. This ensures that data is never lost!


*The Forteco weighing scale*

The data is displayed in clear graphs. This enables accurate visualisation of how the slabs diminish during the night, among other things. In addition, this information can be used to adjust the start and stop times as well as the frequency of watering. The data is stored on a secure server. The grower and, if desired, his adviser, can view this data online with their own login code and password from any desired location.

The Forteco scale is a practical and easily accessible system that can be used for all kinds of crops, such as vegetable and rose cultivation. The data is accurate and accessible everywhere, so that growers can follow the water uptake of the plant at any time.

For more information, please contact our cultivation specialists, via +31-174-525050 or sales@vanderknaap.info.

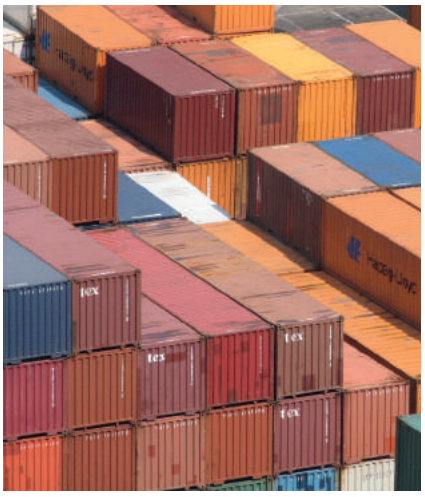
# 24/7 insight into transport data

**Since the end of 2018, Van der Knaap has been working with Logitude; a web-based track & trace system with which customers can follow their orders in real time and download export documents.**

Van der Knaap has many production locations abroad. Our coco products, such as Forteco coco substrate slabs and Propagation Cubes, but also coco peat blocks and discs are manufactured at these locations. One of the unique characteristics of coco is that the products can be transported dry and compressed. This transport goes by sea via container ships.

For orders that are transported by sea, Van der Knaap Group now uses a software program that enables us to give our customers and suppliers 24/7 access to the transport data of their shipments. Orders are registered and processed in the program. This gives a clear overview of the orders placed on the one hand, and the status of shipments on the other.

Customers can now track when their order goes to port, the departure of the container ship and the estimated time of arrival. In addition, a number of documents are available, including order confirmations and export documents. The first customers are now making use of the opportunity to track their orders.



*Containers can now be followed 24/7*

Research into the effects of nutrient solution and substrate on substances

# Influencing substances in tomatoes

**Recent years have seen an enormous increase in organically grown fruit and vegetables worldwide. This trend encouraged Van der Knaap to investigate whether an organic cultivation system has more influence on the substances and flavour of tomatoes than a regular cultivation system. Research into the effects was started in January 2018.**

### Substances in tomatoes

There is an increasing interest in the useful substances contained in crops both in the Netherlands and abroad. Substances are active components that are present in biomass. The substances that were examined in this study are shown in the table below.

| Substance | Type |
|---|---|
| Vitamins | C, B1, B2, B3, B5, B8, B11 |
| Nutrients | Potassium, sodium, calcium, magnesium, nitrogen and sulfate + micronutrients |
| Sugars | Glucose, fructose, maltose, lactose, total sugars, glucose-fructose ratio |
| Other | β-carotene, lycopene, citric acid |

*Table: examined substances*

### Trial design

For this trial, half of the plants were placed on Forteco Power coco slabs. The other half of the plants were planted on stone wool. In addition, a distinction was made in terms of plant feed. We mapped the differences between organic food from our patented bioreactor and conventional mineral feed. The mineral nutrient solution was based on the content of the organic nutrient solution, so that the nutrients measured were administered in equal amounts. The Sweetelle tomato variety, which falls within the baby plum segment, was used.

### Tomato substances analysis

The substances in the tomatoes were examined by a specialised, independent laboratory. Each sample consisted of 150 tomatoes. Different methods of analysis were used to achieve a reliable end result. The effects of both nutrient solutions on the substances and flavour were clearly evident.

With an equal amount of nutrients administered, calcium was significantly better absorbed in organic feed treatment compared with mineral feed treatment. In addition to the differences in nutrients, we also observed significant differences in a number of vitamins. Compared with mineral nutrition, we offer a wider range of substances with the unique organic feed from the bio reactor that positively influences the absorption of nutrients. This results in a different composition of minerals and ingredients in the fruit, making it a more flavoursome product.

### Flavour

The unique flavours of fresh fruit and vegetables are generally the result of an interaction between the tasting and olfactory systems. Our brains receive signals from taste and smell receptors and combine them with visual and texture signals. Sugars and acids are perceived by taste receptors and contribute to good flavour. The flavour of the tomatoes from the various cultivation treatments was tested a total of three times by an independent taste panel from Wageningen University. The organic tomatoes grown on coco substrate slabs scored significantly better than the mineral varieties.

### Brix values

The Brix values were also researched. The Brix value can provide an indication of the sugar content in the fruit. A common standard for the Brix value of cherry tomatoes is between 6.0 and 10.0. The Brix value of the tomatoes in this test was between 9.0 and 10.0 on average.

*Tomatoes on Forteco Power coco substrate slabs*

### Results

This test has shown that the choice of substrate and nutrient solution can influence the vitamin, nutrient and sugar content, as well as the content of the other substances and the Brix values. The results of the test were so positive that follow-up research will take place in 2019.

For more information about this research, please contact Karel de Bruijn via k.debruijn@vanderknaap.info.

# Plug-in-plug system for Phalaenopsis

**Van der Knaap has been active in the cultivation of Phalaenopsis and other orchids for over ten years. In recent years, products have been developed for the cultivation and propagation of orchids. The Fibre-Neth® plug for the propagation of plant material from tissue culture is now indispensable.**

**Rooting test**
Between March (week 10) and August (week 35) of 2018, a trial was conducted in test centre 'de Kas', applying a variety of watering regimes in the plug phase. This made it possible to gain additional knowledge of extremes, which in practice cannot be imitated for technical reasons. For this test, we watered every three, five, nine and fourteen days, without taking into account the needs of the plant. Regardless of the treatment, the plugs were properly hydrated after watering, so also during the extremely dry fourteen-day treatment. The variety used was Soft Cloud, supplied and cut by Floricultura.

We can conclude that the growth rate and the final size of the rooted cutting is strongly influenced by the watering strategy. It was clear that the plants that received water every three days were the largest after the rooting phase of 25 weeks. The plants that were watered every fourteen days were clearly the smallest. The differences between the plants that were watered every five and nine days were minimal.

The expectation was that the plants in the three-day treatment would produce fewer roots. However, the root development of these plants was very good and no less than that of the other plants. However, at the moment of sorting from the 72-hole to the 50-hole tray, some of the cuttings were removed due to strong suspicion of a Fusarium infestation in the soil/plant neck border area. With the other treatments, hardly any plants failed due to Fusarium. In the fourteen-day treatment, some plants were removed due to desiccation.

**Follow-up trial**
After the rooting test, the six, seven, nine and twelve cm Fibre-Neth® pots continued in a follow-up trial which started in week 35. Two mixtures were compared in this test; the current fine mixture compared with a coarser mixture. The plant material used comes from the rooting test.

Floricultura supplied plant material for the 6 cm pots in the 91-hole Obturo® plug. These plants had gone through the usual propagation process at Floricultura with watering according to need. The 6 cm pots have a smaller bore hole, so that the 91-hole Obturo plug can be planted directly in it. The larger pots have a bore hole into which the Bookplug 1.0 can be planted directly.

The 6 cm pots were recently moved to VG Orchids, where the plants have entered the cooling period. The 7-cm pots were moved to Optiflor for the same reason. The 9 and 12 cm pots go through the correct trajectory from hot and cold(er) periods in our own trial greenhouse. We continue to follow the 6 and 7 cm pots at our partners.

**Results**
As a first result, we can conclude that the plants develop well in all pot sizes, both on the fine and the coarse mixture. The plants on the coarse mixture are always watered one to two days earlier than those on the finer plug mixture. In this phase of the trial, watering is determined by the needs of the plant, looking at the roots and the crop stress.

One of the major advantages of Fibre-Neth® is that potworm has little or no chance in the substrate, because the mosquito enters the substrate barely or not at all. An additional advantage is that the grower can grow somewhat wetter than in potworm-sensitive substrates, such as substrates with a high proportion of bark. In addition, the plug-in-plug system can be used in automatic planting systems.

For more information, please contact Twan van den Berg on +31-174-296606.

*The root system of a Phalaenopsis from the trial*

# Sustainable projects

**At Van der Knaap's worldwide production locations, investing in environmentally friendly solutions is crucial. A number of projects are under way at Growrite Sri Lanka and India, two of our production locations that produce high-quality coco-based growing media, to reduce their energy and water consumption, among other things.**

**Growrite Sri Lanka**
At Growrite Sri Lanka, substantial investments have been made in energy-saving measures. 1,230 solar panels have been placed on the factory's roof. Together, they provide more than 80% of the energy needs. The machine park has also been optimised in terms of energy consumption per unit produced.

*Solar panels on the roof of our factory in Sri Lanka*

In addition, a lot of work was done on a water treatment plant. This ensures that the waste water complies with laws and regulations for irrigation water. The next step is to further purify the water so that it can be reused in the production process. In addition, rainwater is collected from both the roof and the drying floor. This is used as irrigation water for the palm trees around the factory. All in all, this has reduced Growrite Sri Lanka's water consumption by 30 to 40%.

Finally, there is the 'Anagathaya Wawamu project', which focuses on the future of the coconut trees. In the past year, every employee has received several (small) coconut palms to plant at home. In addition, a large number of trees were planted in the vicinity of the factory. The total number of trees is 10,000. Another 90,000 coconut palms will be planted during the second phase of the project, which runs until 2021. This has a positive effect on the sequestration of $CO_2$.

**Growrite India**
A number of measures have also been implemented at Growrite India to ensure that water consumption is reduced. A new technique has been developed for washing coco and the recirculation of water. This has resulted in a 30% reduction in water consumption. In addition, the rainwater from the roof and the drying floor of 2 ha. is collected and reused as irrigation water for the palm trees around the factory.

Research into the projects to improve water collection, storage and processing was made possible in part by FMO bank.

## AGENDA 2019

**AGROALIMENTARIA**
**Thursday 9 to**
**Saturday 11 May**
*Santo Domingo,*
*Dominican Republic*
You will find us at booth number 84D at Agroalimentaria in Santo Domingo.

**GREENTECH**
**Tuesday 11 to**
**Thursday 13 June**
*RAI, Amsterdam*
This year, Amsterdam RAI will host the GreenTech horticultural trade fair. You can find Van der Knaap Group at booth number 08.322.

**CULTIVATE '19**
**Sunday 14 to Tuesday 16 July**
*Columbus, Ohio, USA*
Cultivate '19 is the largest horticultural trade fair in North America. You will have the opportunity to participate in many networking activities and there is a growing number of exhibitors. You can find Van der Knaap at booth number 3154.

**FOUR OAKS**
**Tuesday 4 to**
**Wednesday 5 September**
*Cheshire, Great Britain*
As in previous years, we have our own booth at the Four Oaks trade show. You can find us at booth C50.

**Would you like more information about any of the topics in this newsletter? Please contact our Public Relations Department: tel. +31 (0)174 296606.**