GROW-HOW!

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SPECIAL: ORCHIDS

Pot worm control by choosing the right substrate

Another successful orchid trial has been completed in Van der Knaap's innovation centre 'de Kas'. In this trial, three different substrates for cultivation of Phalaenopsis in 12-cm pots were compared. Fibre-Neth® proved itself yet again as an alternative substrate: it quickly absorbs water and nutrients and dries evenly. What's more, the larva of the Lyprauta mosquito (pot worm) has no chance of developing because of the structure of the substrate.

We based our trial design on three substrates. We opted for Fibre-Neth® substrate based on specially selected coco substrate, a loose mixture of coco and bark, and for reference we used traditional Phalaenopsis substrate based on bark and sphagnum. We grew more than 1,600 plants in total from two different cultivars: 'Red Eye' and 'Sweet Talk' by Floricultura.

Good root development on Fibre-Neth®

Substrate trial results

After a relatively short cultivation period of 23 weeks, we evaluated the plants in order to demonstrate differences in growth, development and rooting between the different substrates. Accelerated growth was observed with the loose coco substrate and the Fibre-Neth® substrate. This shows that it is possible to achieve a comparable result in fewer cultivation weeks compared with the current bark substrates. Or growers have the option to produce heavier quality in the same number of weeks.

The Fibre-Neth® substrate had the best overall score. In the last counts, the number of plants developing three branches was particularly high (14.4%) compared with the other two substrates (6.2% in the loose substrate and only 1.4% in the reference substrate).

Van der Knaap's coco substrates absorb water and nutrients quickly and dry evenly. One advantage of the Fibre-Neth® substrate is that each pot weighs the same. This equality in pot volume ensures even results in the greenhouse. In addition, the unique structure of the substrate makes it easier to introduce organic pest control. The population can develop properly in the pots and does not wash out easily.

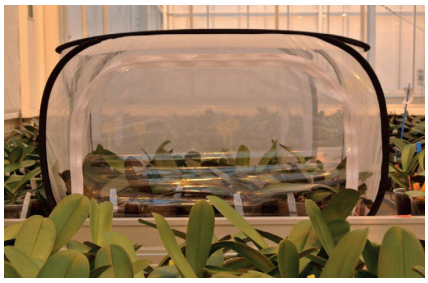
Effect of substrate on shelf life

At the end of the trial, the Royal Flora Holland's Postharvest Knowledge Centre examined the plants of the Sweet Talk variety to determine the effect of the cultivation substrate on consumer value. Several simulations were carried out in order to examine the response of the plants at different stages of cultivation, the transport, point of sale and consumer stages. The plants were assessed at the start of each stage, and once a week during the final stage. The ornamental value of the foliage and the number of good flowers were determined at the moment of assessment.

The Fibre-Neth® substrate had the best overall score for shelf life as well. This substrate yielded the highest number of open flowers and showed hardly any bud drop or bud drying during the eight weeks the trial lasted. These results are consistent with the 2019 shelf life trial. The substrate has a relatively high moisture-retaining capacity, meaning that the plants can last longer without watering. This is perfect for the transport and retail phase.

Pot worm-free orchid cultivation within reach

Virtually simultaneously with the trial in 'de Kas', a second orchid trial was carried out in the World Horti Center in Naaldwijk, initiated by the Potorchidee crop cooperative. The aim was to jointly demonstrate that potworm development can be prevented with coco substrate, while achieving at least the same quality as with traditional substrate. Previous trials did not yield a reliable picture because watering and fertilisation cannot be controlled separately in practice.



Pot worm introduction during WHC trial

During this trial, Lyprauta mosquitoes were deliberately introduced in separate tents and not actively controlled. Afterwards, it appeared that the population had not developed in the Fibre-Neth® substrate. Thanks to the unique structure, the pot worm larva has no opportunity to develop and the damage remains manageable.

From Phalaenopsis and Cambria to Oncidium; Van der Knaap has a solution for every variety and (final) pot size. The unique Fibre-Neth® and Obturo® production lines produce high-quality products that are fully tailored to the needs of orchid growers.

SUBSTRATES

Van der Knaap has developed a balanced substrate that mainly consists of coco: Knaap Orchid Substrate, also known as KOS. In consultation with customers, this substrate can be further tailored to their specific growing conditions. The mixtures can consist of fine or coarse coco material, coco fibre and/or bark. Using these raw materials creates a mixture with structure, nutrients and capillary action in the pot. In addition, the coco fibre promotes efficient water distribution.

Root damage by mosquito larvae (pot worm) is a common problem in orchid cultivation. The larvae cause root death in many plants. As a result, the plants produce fewer branches and sometimes even die off, which unnecessarily reduces the plant's commercial value. When using traditional bark-based substrates, more frequent watering exponentially increases the risk of pot worm. With coco, however, all the signs point to pot worm levels being manageable.

One advantage of coco substrates is that it is possible to grow somewhat wetter than with substrates with a large proportion of bark. This ensures an extra moisture buffer at delivery and promotes a longer shelf life. However, this does require adjustments to the watering strategy. At Van der Knaap, we assist our growers: our cultivation advisers provide tailor-made advice including, if desired, adapted fertilisation schedules.

Coco substrate is available in several volumes; Big Bags, Big Bales or in bulk.

BOOKPLUG

The Bookplug was specially developed for the propagation of Phalaenopsis. The plug is made from a specially selected substrate based on coco or peat. The composition and fertilisation of the plugs are tailored to the wishes of the customer.

Due to its unique design, the plug makes it easier to place the tissue-culture plant. Because they are slightly open, the plant material can be positioned quickly.

OBTURO® PS MINIPLUG

Obturo® plugs with planting grooves (PS) were specially developed for the propagation of Phalaenopsis in small size pots.

At the start of propagation, the plugs holding the tissue-culture plants are placed in a 91-hole tray. In the second stage of propagation, the plug is transferred into a 6 or 7-cm Fibre-Neth® pot with a pre-drilled hole.

PLUG-IN-PLUG

During propagation, small plugs are used. When the plants have grown sufficiently, they can easily be transferred, plug and all, into a larger pot. This allows a higher number of plants to be placed on a smaller surface, so that all the available space is optimally utilised.

The drill hole in the next plug has the optimal dimensions to enable an ideal connection between the rooted plug and this end plug.

Contact with the pot is maintained all around the plug. This avoids any gaps that would otherwise allow water to drain away too quickly and creates an optimal water balance.

One of the benefits of Fibre-Neth® is that Lyprauta flies have difficulty penetrating the substrate, so that the larvae have little or no chance to establish in the pot.

ADVICE AND GUIDANCE

Partly thanks to practical research in the innovation centre 'de Kas', Van der Knaap's cultivation advisers have an enormous body of knowledge at their disposal to offer orchid growers targeted guidance. This includes advice on optimal growing conditions for cultivation on coco and, for example, drawing up an adapted fertilisation schedule in consultation with the customer, to optimally control pH and nutrition.

If you are interested in advice (no strings attached) or finding out more about the substrate tests with Phalaenopsis that will be carried out in 'de Kas' in the near future, please contact Twan van den Berg at +31(0)174-296606 or t.vandenberg@vanderknaap.info.