

ANTHURINFO

Cantello

'Dressed to impress'



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**Brisbane,
newcomer in the
multiple spikes
segment**



**Flowering wall,
a colourful addition**



**Healthy water
as a basis for
healthy cultivation**

Brisbane, a newcomer in the segment with multiple spikes!

In recent years, the multiple spikes segment has won its own niche in the Phalaenopsis market.

The product is distinguished by three, four and sometimes even five spikes from the 'common' plant with one and two spikes and has a good ornamental value thanks to its abundance of flowers. It is therefore not surprising that florists have been swift to embrace this segment to distinguish themselves from the Phalaenopsis sold through other channels.

With the introduction of the Anthura Dover variety two years ago, Anthura laid a solid foundation in the multiple spikes segment. Dover is characterized by its compact stacked growth habit, a high percentage of plants with four spikes and a flower size of 7 cm.

With newcomer Anthura Brisbane, a start was made to expand the assortment in the multiple spikes segment by plant height and flower size. Brisbane has the same compact stacked growth habit as Dover, but with a high percentage of plants with three spikes and a flower size of 8 cm. The plant height of 60 cm is the same. Brisbane is characterized by the larger flower size of 8 cm compared to Dover. The flower colour of Brisbane is a true white and together with the green stem it provides a fresh appearance!

If you have not yet received the two varieties at the nursery, please ask your sales manager about availability and let us convince you!

Robert Kuijf
Product Manager, Orchids



Anthura Brisbane® (PHALZIFY)

🌿 Colour	WHINX
🌸 Flower size	8 cm
↑ Height	60 cm
🪴 Pot size	12 cm

Leganza: a popular pearl-coloured pot plant

The Dutch consumer is not primarily looking for standard red, white or pink pot Anthurium, but a beautiful pearl-coloured pot Anthurium named Leganza®.

Anthura was present at the Libelle Zomerweken event on Almere beach which every year attracts approximately 80,000 visitors, particularly women. This was the ideal moment to find out what these women like and prefer.

This year we built a wall of 9 cm pot Anthuriums on the stand to show an alternative application and to bring the wide range of colours to people's attention.



The entire fair constitutes a beautiful setting to conduct consumer research. And guess what? The Dutch consumer is not looking primarily for the standard red, white or pink pot Anthurium, but for a beautiful pearl coloured pot Anthurium named Leganza®. Leganza received by far the most votes during our research, in which visitors could choose from several plants and indicate their favourite. This pearly white pot plant outnumbered by far the other varieties.

As growers, exporters or breeders, we often believe ourselves to have a monopoly on wisdom. The trap lies in the fact that our personal opinion about a variety takes over and what the consumer actually wants is not given enough consideration. The result is then that 'the consumer' often has a different opinion.

The above shows that the retail chain should think more in terms of market needs, also taking into account the different cultures, peoples, habits and tastes of different countries. Consumers quite simply do not all have the same taste.

You are very welcome to come and see Leganza® in the showroom! If you wish to receive this plant yourself, please ask your sales manager about the availability.

Richard Smit

Sales & Product Manager, Anthurium pot plants

Leganza® (ANTHCOTDOK)

🎨 Colour	pearl
🌸 Flower size	medium
🪴 Pot size	12, 14 and 17 cm



Flowering wall: adding a colourful touch to work environments and public spaces

Everyone knows that plants are good for the work environment. They reduce stress, increase productivity, improve the atmosphere and in some cases they also have an air-purifying effect.

Natural Wall

A few years ago, the so-called 'natural walls' arrived to make the most of these positive effects. These walls of green plants emerged here and there in large public spaces like offices and hospitals. In addition to the aforementioned benefits, the 'walls' also appeared to offer an excellent sound insulation, having a positive effect on acoustics.

A disadvantage of these 'natural walls' is that the maintenance of the plants was difficult, they added little colour to the spaces and it was very onerous and expensive to create and set up the walls.

Flowering Wall

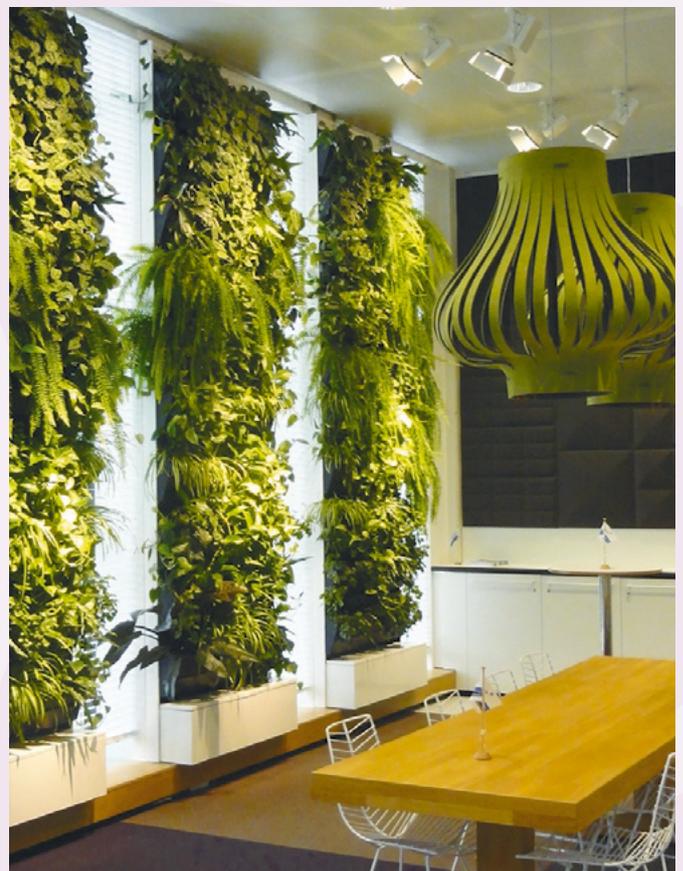
The construction and arrival of the 'Flowering Wall' offers the solution. This wall does not require a special background construction, because it is composed of separate planters that can be easily placed on top of and next to each other. They are, as it were, Lego blocks clicked together and this way the wall can be made as high and as wide as required. Moreover, the planters feature an attractive design.

For maintenance purposes, the wall has an automatic Aquastick irrigation system. With this irrigation system, equipped with a stick, the plant absorbs water from a reservoir below it. This way, the plant regulates the amount of water it needs instead of a daily or weekly irrigation session. The constant supply of water according to the needs of the plant ensures better growth and a healthier plant. The plant looks after itself and the reservoir only needs to be filled once every couple of weeks. The maintenance of the Flowering Wall is minimal, offering ease of use and a long shelf life.

Just like the Natural Wall, this wall is beneficial for acoustics and has a positive impact on relative humidity.

Air-purifying effect

The wall offers opportunities for showcasing flowering pot plants. The Anthurium pot plant is very suitable for use in a Flowering Wall as it is a strong plant with a great diversity of colours and pot sizes and also purifies the air. The plants extract fine dust and volatile organic compounds (from insulation material, photocopiers, computers, etc.) from the air. In environments such as offices, hospitals and public spaces, the air tends to be polluted because often there is hardly any or poor ventilation.



*The natural walls at Volker Wessels Academy in Amersfoort
(picture Zuidkoop Natural Projects)*

Flowering wall



Flowering Wall at Anthura

With only one plant, the air-purifying effect is not effective in these spaces, but a wall is made of hundreds of plants and the effect is clearly measurable. Several independent authorities, both in the Netherlands and abroad, have performed research and tests, in which the air-purifying effect has been indisputably proven.

In addition to this health benefit, a Flowering Wall is also a beautiful and striking object in itself. Thanks to the many colours, the wealth of flowering plants offers a beautiful sight. For this reason, Flowering Walls are being used more and more at trade fairs, events and parties, yet every space is suitable to install a wall like this; from libraries, town halls, ministries and other government buildings to banks, museums, restaurants and hotels. The possibilities and applications are endless.

Feel free to contact us for more information by sending an e-mail to info@anthura.nl or calling us at +31-10-5291919.

Marco van Herk
Commercial Director



Marco van Herk during the Hortiflor Expo in China on the occasion of the tenth anniversary of Kunming Anthura Horticulture Co. Ltd.

Cantello: 'Dressed to impress'

Fashion and flowers is an increasingly common combination, whether for decorating shows or featuring floral prints on the creations presented.

During the forthcoming fashion week, Cantello® will be in the spotlight. This newcomer has three striking properties. The cherry red colour and the subtle brown veining give this thoroughbred Anthurium a warm appearance. Its shape is very special, because it is just a little different from the well-known flower shapes of anthurium. The shape reminds of a summer dress lifted up by the wind, with an elegant, wavy movement. The strength of the flower is also visible in the flower shape, stem and shelf life. In short: an excellent quality. This option can easily compete with the standard.

An extra asset of the flower is that the solid stem can be harvested during the winter months for extra length. The shape of the flower and the more upstanding position of the bract make Cantello suitable to sell with extra-long stems in buckets. Florists will not be able to resist the temptation and will want to start working immediately with Cantello. All in all, an interesting variety to add to your assortment.

Hans Prins

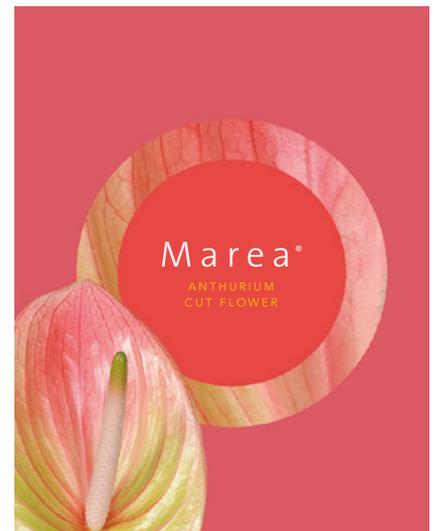
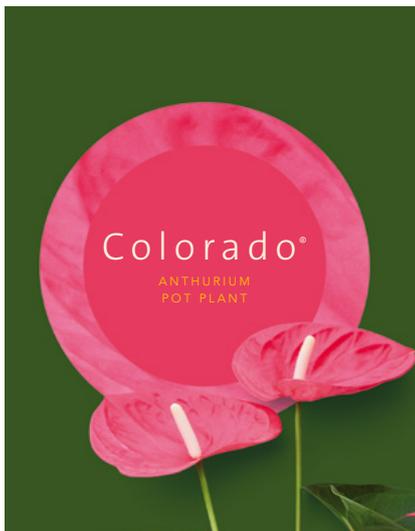
Sales and Product Manager Anthurium



Cantello® (ANTHIQDO)

 Colour	Cherry/pink (with brown veins)
 Flower size	17-19 cm
 Production/m ² /year	approximately 95-100
 Number of plants/m ²	14
 Average shelf life	43 days

From 2 – 4 November 2016 the FloraHolland Trade Fair will take place in Aalsmeer, the Netherlands. The meeting place for international horticulture. We will be present in stand 20.10 across the centre of the exhibition: the Royal FloraHolland House.



News

New employee in the Sales Department



My name is Leander Gravesteijn, I am 22 years old and I have been working for Anthura since 1 April. In March I finished my HBO studies at the IVA Threebergen Business School and I grabbed the opportunity to start working for Anthura with both hands!

As a teenager, I worked for eight-and-a-half years in the horticultural sector and after my studies I wanted a sales job in this amazing business. This was made possible at Anthura through my position as Junior Sales Manager. My challenge in this position is to support the Account Manager for Phalaenopsis Netherlands in such a way that they can focus more on you in the future and our collaboration can be made even closer.

I hope to be able to speak to our Dutch customers or even meet them soon!

Leander Gravesteijn
Junior Sales Manager, Phalaenopsis Netherlands

CULTIVATION TECHNIQUES



Healthy water as a basis for healthy cultivation

Healthy irrigation water is of vital importance for healthy cultivation and a sound business.

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For targeted cultivation advice on Anthurium and Phalaenopsis pot plants and Anthurium cut flowers.



New colleague at IMAC

Healthy water as a basis for healthy cultivation

Healthy irrigation water is of vital importance for healthy cultivation and a sound business. Fungal or bacterial infection in the plant, growth stagnation or impaired root growth is increasingly linked to irrigation with unhealthy (contaminated) water.



Open basin

Increased losses due to fungi like *Fusarium* and *Pythium* or bacteria such as *Acidovorax* (*Phalaenopsis*) should lead to a check of the irrigation water. Analyses of irrigation water or basin water can demonstrate that the water is contaminated by a large amount of fungi and bacteria.

In many cases, increased losses or long-term problems with root quality could have been prevented if the irrigation water had been checked regularly for the presence of these germs.

Water always contains a host of fungi and bacteria. In many cases, the risk of infection is small if they appear in normal

amounts. Problems arise when the germs increase in number. This not only gives rise to an increased risk of infection from these germs, but if there is any deterioration in the root environment, the harmful fungi can also prevail in the substrate. These include fungi such as *Rhizoctonia* and *Athelia rolfsii*. In addition, problems can arise with the uptake of certain nutrients.

Common fungi and bacteria

Fungi

- *Athelia rolfsii*
- *Cylindrocarpon destructans*
- *Fusarium spp*
- *Penicillium spp*
- *Phytophthora spp*
- *Pythium spp*
- *Rhizoctonia spp*
- *Trichoderma spp*

Bacteria

- *Agrobacterium*
- *Erwinia*
- *Pseudomonas*
- *Acidovorax*

Unhealthy water

The need for healthy irrigation water is beyond dispute. However, there is little insight into the contamination of irrigation water. The fact that healthy water can change in a very short space of time into unhealthy water is given too little attention. Analyses demonstrate that the amount of bacteria in still warm water can grow within 12 hours from one bacterium to 68 billion bacteria. Unhealthy water can be found in several places in the greenhouse.

Basin

Clean water begins with the storage of the irrigation water (mostly rainwater). In open basins, the water can be contaminated from the outside by people and animals (birds, insects, etc.). In particular, all different kinds of algae can grow rampantly because of the light in the water. The water is further heated by sunlight, promoting the growth of algae, fungi and bacteria.

Still water

After the irrigation session, water is often left in the irrigation pipes or drip irrigation tubing in the greenhouse. Also when the irrigation pipe is emptied after irrigation, water is left behind in the main and supply pipes. At least 5 m³ of water per hectare is

left in the pipes. In many cases, this water can remain stagnant from a few days to a couple of weeks.

This also applies to the 100 m³ of water that can be left in a silo. The oxygen level falls and sometimes it is so low that aerobic bacteria are not able to develop any further and even die. On anaerobic organisms, the oxygen level in the water has no impact on the growth and propagation, so that these (often negative) bacteria prevail.

Recirculation

Most growers recirculate their drain water. In the Phalaenopsis cultivation, lots of growers have started with recirculation this year. The water collected has run over the leaf, along the root and through the substrate, picking up lots of bacteria and fungi along the way. By reusing this water again and again, there is a good chance that the infection pressure increases.

Slime formation in water pipes

In many cultivations, slime formation in pipes is the catch. Often, the amount of biofilm that can form in an irrigation pipe in a year is startling, especially at the end of the pipe and in other 'dead' parts of the pipes where a lot of dirt can build up in a

short time. After a few years, new pipes can look like the one shown in the picture.

The formation of biofilm in the pipe system is often a source of infection that is hard to tackle. The biofilm forms a protective layer over the germs which make them difficult to reach by most disinfectants. Although pipes seem to be clean, a dangerous biofilm can still be present (a biofilm can be 10 to 20 microns thick), in which bacteria and fungi find a breeding ground.

The water that is disinfected by, for instance, a heater or UV installation is infected anyway along the way to the plant. And, as already mentioned, the growth of the pathogens can rapidly increase in still water.

Fertilisers

Bacteria and fungi also need nutrients to grow, particularly nitrogen. An increase of nitrogen can speed up the growth of germs. Increased ammonium or urea can deplete water quality because more oxygen is extracted, which is necessary for the conversion of these fertilisers.



Slime formation in a pipe

Healthy water

The above points of attention are not an exhaustive list, although they do point to a number of measures necessary to keep the water healthy.

Basin and silo

It is advisable to cover the basin. There is still a small risk of infection by people and animals, but the growth of algae will be prevented. This will also result in less dead material (sludge) on the floor of the basin. The same also applies for the inside and outside of silos. Cover the silo with a light-proof canvas.

Contamination builds up at the bottom of basins and silos. It is necessary to remove this sludge regularly and clean the silo. When building a silo, pay attention to this detail. Let the floor of the silo slope down towards the centre and make an opening in the middle of the silo canvas that is connected to a discharge pipe. When the silo is nearly empty, the contamination can easily be washed away through this drainage.

Water flow

In order to keep control over water quality, it is necessary to know how the water flows in the company. Make a schematic drawing of the water flow of the basin (or silos) via the pipes towards the plant. It is important to depict the taps and valves

on the pipes and in the silos. It might be the case that because of a poorly closed valve or tap, unhealthy water flows unexpectedly from one silo to another silo or water pipe.

Water treatment

The most important measure is to treat the water. Water treatment entails cleansing the water of any impurities it might contain, such as contaminants and micro-organisms (germs). The germs are removed from the water by means of disinfection.

A lot of companies decontaminate (disinfect) the irrigation water by heating or UV. For pot and cut Anthurium growers, recirculating and disinfecting the irrigation water has been an effective way to kill germs in the drain/return water for many years. In addition to this, several disinfectants are used like chlorine or copper and silver ions.

Besides disinfection, it is also necessary to clean the water. Surfaces and walls of equipment and irrigation or drip irrigation pipes should be cleared of unwanted contamination and biofilm.

It is important to know that the appearance of biofilm in pipes is not prevented when the water is disinfected

with a UV installation or by adding chlorine. To kill the germs in the water and to remove the biofilm, a powerful oxidizing agent is required in the water. The three best-known oxidizing agents in the horticultural industry are chlorine dioxide, hydrogen peroxide and ozone.

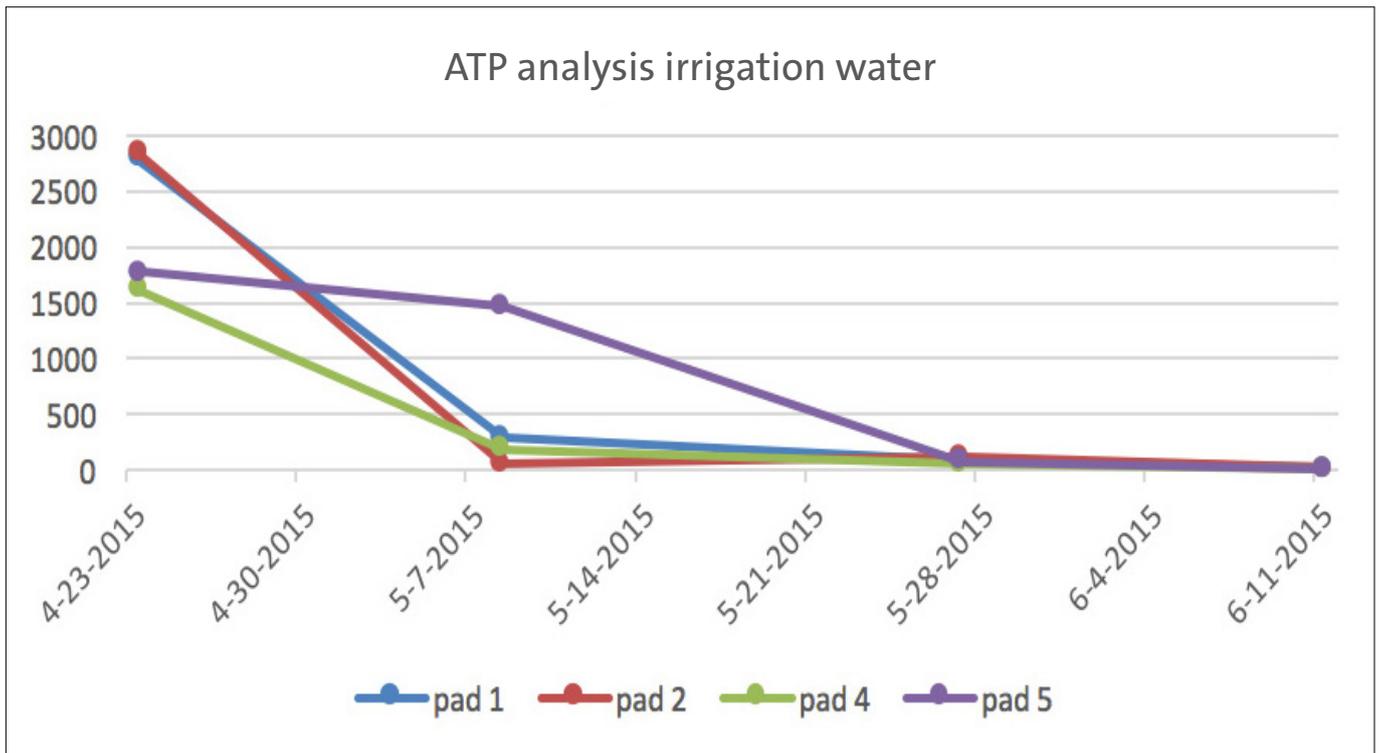
From a practical point of view, dosing hydrogen peroxide (H₂O₂) is the most attractive option (see chart for adding H₂O₂). In principle, H₂O₂ is a more powerful oxidizing agent than chlorine dioxide. Often, H₂O₂ is added in a higher dosage to the water. A disadvantage of hydrogen peroxide is that this oxidizing agent is quickly fully reacted (oxidized) and splits into in H₂O and O₂.

There are other products available (for instance, Hydrocare and Huwa-san) in which a minimum quantity of silver chelate has been added to H₂O₂, resulting in the stabilisation of H₂O₂. As a result, the H₂O₂ keeps oxidizing for longer and has a much better disinfection and cleaning effect.

The chart and graph below (source: Intracare) show a number of measurements of water in irrigation pipes of an orchid grower and also clearly shows that shortly after administering stabilized H₂O₂ the number of germs has fallen to almost zero.

	ATP for Hydrocare	ATP with 40 ppm Hydrocare	ATP with 40 ppm Hydrocare	ATP with 40 ppm Hydrocare
	23-4-2015	8-5-2015	27-5-2015	11-6-2015
path 1	2776	291	93	21
path 2	2835	60	117	22
path 4	1604	65	65	20
path 5	1779	1471	77	14

Water pollution is tested by measuring the amount of Adenosine triphosphate (ATP) in the water. This is a way of demonstrating the amount of organic material in water. ATP measurements in water before and after the administration of Hydrocare.



ATP measurements in irrigation water before and after applying Hydrocare
(Source: Intracare)

Other measures

- Draining of pipes: In order to prevent the build-up of dirt (especially at the end of the pipe) it is necessary to drain the pipes regularly. It is advisable to drain the pipes at least four times a year. Be aware that a lot of dirt is loosened from the pipe wall when you start dosing an oxidizing agent (H₂O₂). In this case, it will be necessary to drain much more frequently. Ensure that the drain water does not come into contact with the plants and never let the drain water flow into the growing beds (cut Anthurium). It is important to keep control of the situation in the pipes. Suggestion: when you drain on a regular basis, it is an option to install a tap at the end of the irrigation pipe and a U-bend in the hose to the floor.
- Alternating irrigation taps: always start with another irrigation tap. When irrigating, the water has stood still for minimum of one day (often several days) in the pipes. If you always use the same irrigation tap, this still water will always end up in the same irrigation compartment.
- Aeration of water: in order to maintain oxygen levels in the silo or basin, an aeration system can add more oxygen to the water.



Installation of administration of H₂O₂

Chart for administration of H₂O₂

The most effective and reliable way of adding a concentration of H₂O₂ to the water is injecting the product directly into the main tube. The installation is fairly simple.

Required	Data	Calculation
An injection pump and a flow meter on the pipe (see picture). The measurement of the flow is connected to the injection pump, so that the number of pulses per minute are adjusted to the amount of water that flows through the pipe per minute. When the flow on the pipe is fairly constant, a flow meter is not required.	The pump should be able to pulse a minimum of 10 ppm (parts per million) and a maximum of 200 ppm. A capacity of 150 pulses per minute is the minimum requirement. The minimum and maximum pulse length (amount of ml) depends on the water volume that passes through the pipe per time unit. In many cases, a pump is required which gives 2 to 5 l/hour.	The flow during irrigation is 400 litres per minute. The pulse pump has a maximum capacity of 180 pulses per minute. The desired dosage is 25 ppm H ₂ O ₂ . The percentage of H ₂ O ₂ in the product is 50%. In other words, 50 ppm of the product is required (= 50 ml per 1000 litres of water). This is 20 ml of product per minute at 400 l/m (at a maximum number of pulses/m, 0.1 ml/pulse is injected)

It is possible to add the hydrogen peroxide to the fertiliser solution in the B container. Because the H₂O₂ starts to oxidize, the concentration in the irrigation water is not stable. We do not recommend this application for the longer term. Do not add the H₂O₂ under any circumstances to the fertiliser container in which the trace elements are present. Chelates are decomposed by the oxidizing agent.

Step-by-step plan

In order to keep your finger on the pulse in practice and to be sure that the irrigation water is and stays healthy, some action points are mentioned below. The points are divided into a step-by-step plan consisting of three steps: namely control, analysis and measures.

1. Control

- Does the basin canvas still function properly and is the basin of the silo still closed properly?
- How much sediment and dirt are there on the floor of the basin or the silos?
- Is the schematic drawing of the pipes correct? Have renovations been

implemented or adjustments been made to suction or pressure lines?

- Are the taps and mixing valves still working properly?
- Are there any leaks from irrigation pipes, connections of drip irrigation tubing or leaking nozzles in the greenhouse?
- Can water from the outside still enter the greenhouse? Think of broken façade windows or poor water disposal and drainage near the greenhouse base.
- How much slime formation is present in the pipe? Check this by removing



Peroxide test strip with indicator

the end cap of the pipe. Scrape, with a cotton swab attached to a thin pole of about 40 cm, the slime formation in the pipe between the last two nozzles.

- When using an oxidizing agent, check whether the concentration is still sufficient. This can be done using test strips with indicators in certain colours (see picture).

2. Analysing

- Have the irrigation water analysed on a regular basis (at least four times per year is recommended). In spring and summer in particular it is advisable to have the irrigation water analysed more frequently. In order to check the irrigation water for the extent of the contamination, a colony count can be performed. This can be used to demonstrate the number of fungi and bacteria. A colony count is often indicated as cfu (Colony Forming Units). Groen Agro Control and Productschap Tuinbouw have established maximum limits for safe irrigation water. For bacteria this is a maximum of 500,000 cfu/ml water and for fungi a maximum

of 20 cfu/ml water. Suggestion: Suppliers of stabilized H₂O₂ such as Intracare and Huwa-san often offer a free inventory of the disease pressure in the pipes.

- Analyse the irrigation water also for the presence of the most common fungi and bacteria like Fusarium, Phytophthora and Pseudomonas. This can be done by means of a DNA multiscan. You can decide to analyse the water first for the presence of germs and then, in the event of increased pressure to germs, do a DNA scan to find out which germs they are. Some

companies have their water analysed frequently for the presence of certain germs in order to track the course of these disease vectors throughout the year. The chart below shows the results of a two- to four-weekly analysis.

3. Measures

On the basis of the results of your controls and analyses, measures should be taken. Below you will find some of the measures to be taken in order to provide support:

- Cleaning of silos;
- Removal of sediment from the basin;
- More maintenance of disinfectants;

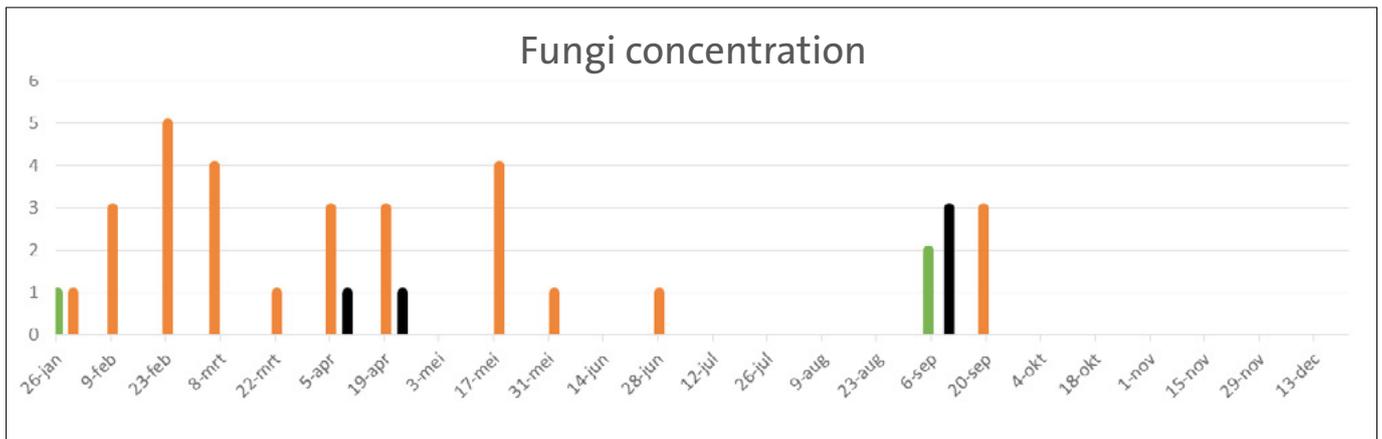
- Drain pipes more frequently;
- Increased concentration of oxidizing agent.

This information and checklist gives you the tools to incorporate even more security measures for a healthy cultivation and a sound business. Healthy irrigation water is of vital importance!

If you have more questions about this article or you want to receive more detailed information, please contact Bureau IMAC.

Ed Konijn

Bureau IMAC Bleiswijk B.V.



Fungi concentration in drain water during one year.

Pythium is found regularly (orange bar).

Next to it Fusarium (black bar) and Cythindrocarpon (green bar).

News

New employee at Bureau IMAC

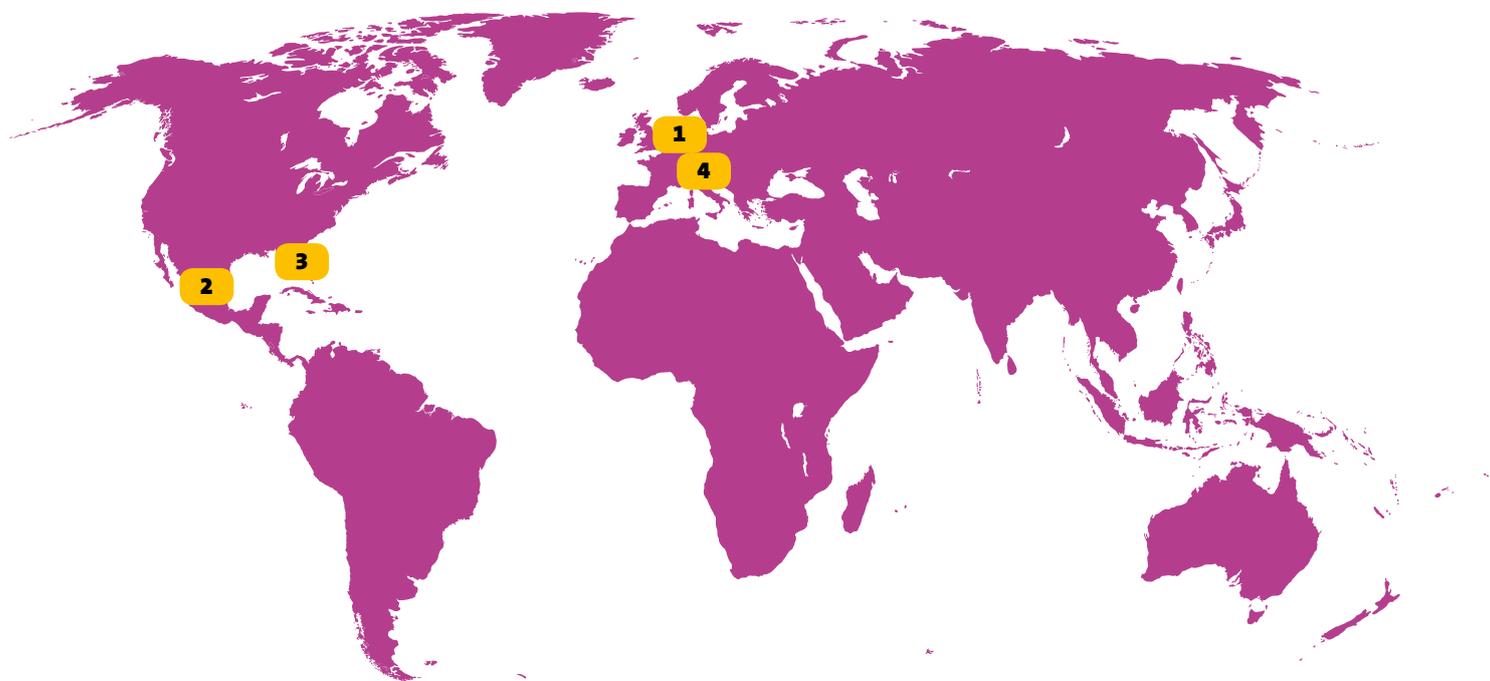
My name is Kees van der Hoeven, I am 61 years old and I live in Maasland. I am married to Jane and the proud father of three children. I have been working for Bureau IMAC Bleiswijk B.V. as a cultivation consultant since 1 June, specializing in pot Anthurium and exclusive orchids.

My passion for growing started very early; as a child I grew up among Anthuriums and other houseplants in my parents' business. I believe it is a fantastic challenge to be able to apply my knowledge as a cultivation consultant in the group and to contribute to the further development of these beautiful cultivations, both at national and international level.



Kees van der Hoeven

Summary of trade fairs from October up to and including January



1. Flora Holland Trade Fair

Aalsmeer, The Netherlands
11/02/2016 – 11/04/2016

2. Expo Agro Alimentaria

Guanajuato, Mexico
11/08/2016 – 11/11/2016

3. TPIE

Fort Lauderdale, United States
01/18/2017 – 01/20/2017

4. IPM

Essen, Germany
01/24/2017 – 01/27/2017

Colophon

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Anthura B.V.

Anthuriumweg 14
2665 KV Bleiswijk

The Netherlands

Tel. (+31) 10 529 1919

info@anthura.nl

www.anthura.nl

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