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unlimited in varieties

ANTHURINFO

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Amigo Improved

A cut flower that's easy to make friends with, perhaps even your new BFF (best friend forever).

In the horticulture sector, special attention is paid to strong variety characteristics when it comes to innovation. This is logical, because measurement is the key to knowledge. With the introduction of Amigo® Improved we are raising the standard for varieties in the 'obake' segment to an even higher level.

Amigo Improved is a large flower in the red-green colour combination. The flower is not too large and has a stable colour distribution.

Improved

A logical comparison of Amigo Improved with its predecessor is quickly made. The oversized flowers of the old Amigo variety definitely belong to the past. The stable colour distribution of the new flower is also a major advantage.

New super variety

With respect to production and crop structure, great progress has been made as well. Different customers and crop consultants classify Amigo Improved as 'a new super variety'. The high production goes without saying, but equally important is the crop structure. Short internodes and relatively small leaves (optimal flower/leaf ratio) lead to a clearly organised crop and lower labour costs.

Amigo® Improved

Colour	Red-green
Flower size	15-17 cm
Production /m²/year	93/ 101 (traditional / JBB)
Planten /m²	16
Vase life	40 days

The cultivation method has changed a lot over the last 10 years, and now different cultivation methods are being used. The most suitable method depends on the variety and some specific factors like location, cultivation experience and equipment of the greenhouse. But the traditional approach (leaf cutting) also leads to great cultivation results. For all these reasons there is a good chance that Amigo Improved will be 'your new BFF'.

Hans Prins
Sales & Product Manager Anthurium

Gerben van Giessen about Undrcover

Gerben van Giessen has been growing Phalaenopsis since 2008 under the name Butterfly Orchids. The company is situated in the Dutch town of Andel and on its 34,000 m² facility more than 2 million Phalaenopsis are produced every year for the European sales market.
In 2015, Butterfly Orchids introduced the water buffer system Undrcover®, which was developed in collaboration with StudioBlauw, on the Royal Flora Holland Trade Fair in Aalsmeer. Now, more than a year later, we are interested to hear about his experiences with Undrcover.

What were the reasons behind the launch of Undrcover?

At the Anthura Relation Day in May 2015, Marco van Herk gave a presentation about irrigation systems. The idea that the plant can absorb water according to its own needs, thus preventing "drought stress", was very appealing to me. The consumer wants to water the plant, but does not know how much and how often.

Back home, I called Wahing Lee from StudioBlauw with the idea of developing together a universal water buffer system. Besides the fact that I have good experiences with StudioBlauw in terms of marketing (the entire corporate identity of Butterfly Orchids is designed by StudioBlauw), I consciously opted for an external party to develop the water buffer system. By outsourcing, it will be accessible to multiple growers and products and it will create support in the market.

Water buffer system Undrcover®

What exactly does the Undrcover concept entail?

Plants often die because of insufficient or excessive watering. Undrcover offers a solution for this problem. Undrcover consists of a system in which the plant receives water according to its needs by means of a small wick. This natural principle is also called capillary action.

The plant receives exactly the amount of water it needs. We developed a special pot for the existing cultivation pot with the wick. This ensures that at the bottom of the pot some space is left for a water buffer. You only need to make sure that the water level does not get too low. Easy, isn't it?

In order to hide the water buffer system, we developed beautiful covers that match each interior. These covers also have a useful window to monitor the water level. The system is currently available for the 12 cm pot size.

How has the trade reacted to the Undrcover concept?

Most of the trade still prefers the standard. They do not have extra money for an irrigation system. The strength of Undrcover is that it combines a water buffer system with a trendy pot cover. The trade considers this as "added value" and in that case it may cost extra money.

It still happens that the trade only finds out later that they bought a plant with a water buffer system. The concept is increasingly well-known, also because we have been supplying via the auction clock since week 32-2016. Meanwhile 30%-40% of all our plants leave the company with Undrcover. It is mainly bought by market players that want to distinguish themselves in the field of quality and ease for the consumer.

What are the additional costs of the Undrcover concept?

The exact costs are hard to determine, since they depend on the size of the order and how efficiently labour is dealt with. A gross price indication for a water buffer system only is

€0.20 - €0.30 (including labour). Depending on design costs and copies, the 'pre-tax' price for a pot cover amounts to €0.14 - €0.25. The additional costs for the total Undrcover concept range from €0.40 to €0.70 per plant including labour.

How do you see the future of the Undrcover concept?
Besides Butterfly Orchids, Undercover has also started to collaborate with Anthuriumkwekerij de Groene Tint and the nursery Van der Voort Potplanten associated with Decorum.

In order to further expand the introduction and development of the new irrigation system, Undrcover will start to collaborate with Modiform.

Modiform will focus their attention initially on the worldwide distribution of Undrcover pots. The account team and the distribution network of Modiform will ensure a good information service, promotion and availability of Undrcover.

I am looking forward with confidence to the future of the Undrcover concept!

Robert Kuijf
Product Manager, Orchids

Gerben van Giessen

Trendy pot covers

Stellenbosch and Pretoria: two colourful appearances

When buying a flowering plant, the consumer is influenced by several factors. The most determining purchase factor is the colour of the flowers. A preference for a certain colour is not only very personal, but also depends on the use of the plant and often differs from one country to another.

In contrast to the sales of mixed Phalaenopsis, with sales according to variety name we have gained more insight into customers' preferences for certain colours. This information is very valuable for all the parties in the chain and can be used to adapt the offer better to the wishes of the consumer.

Top 3 colours

The three main colours that are sold the whole year round according to variety name are white, (pastel) pink and dark purple. Yet the demand for dark purple is difficult to meet due to limited availability, but with the introduction of Anthura Stellenbosch and Anthura Pretoria we are about to change this.

Stellenbosch

This newcomer can be described best as "a variety with the X-factor that will make many consumers stop on the shop floor!"

This orchid has large, deep purple flowers, beautifully arranged on the stem. The plant measures 70 cm and has a flower size of more than 8 cm. For a high percentage of plants with two spikes the variety needs a sufficiently long growing phase, and is thus especially suitable for slightly heavier growers.

Anthura Stellenbosch

Anthura Stellenbosch

Anthura Stellenbosch (PHALDUKAI)

Colour code	PURRX or colour: purple
Flower size	8 cm
Height	70 cm
Pot size	12 cm

Anthura Pretoria

Pretoria

Pretoria stands for pure beauty; the flowers are velvety and have a deep purple colour with a soft white edge. Consumer panels have voted it a winner several times as most popular plant.

The plant measures 65 cm and has a flower size of 8 cm. With a normal cultivation duration of 46 weeks, the crop produces 80% of plants with two spikes.

If you still don't have these dark purple varieties in the nursery, ask your sales manager about availability and convince yourself.

Robert Kuijf
Product Manager, Orchids

Anthura Pretoria (PHALUFREL)

Colour code	PURRX or colour: purple
Flower size	8 cm
Height	65 cm
Pot size	12 cm

Expo Agro Alimentaria in Mexico

Traveling in Mexico

The Mexican enthusiasm for Orchids and Anthurium is considerable. Each year at the beginning of November the largest agricultural fair in Mexico takes place, called the Expo Agro Alimentaria. This trade fair is organized in the city of Irapuato, in the state of Guanajuato.

At this spacious trade fair you will find everything in the field of agriculture and horticulture. It has more than 1,000 stands with an impressive demonstration area of hundreds of agricultural machines and a showroom of almost 4 hectares for the different indoor and outdoor cultivations.

In the middle of this trade show, Anthura's stand was set up in the Holland pavilion. Our slogan 'Unlimited in Varieties offering unlimited possibilities' took up the back wall of the stand and was highlighted with a wide variety of colours of the exhibited varieties.

This year, one of our customers also took part in the fair with his own stand, with the aim of selling finished products at the show. Before the show started there were some nerves in play, because it was their first time at the fair, but the plants sold like hot cakes. All expectations were exceeded!

Mexican horticulture

Developments have occurred rapidly in the Mexican horticultural sector over the past few years. More and more growers are willing to make the necessary investments to be able to produce more efficiently and to improve the quality of the end product.

Consumers are willing to pay extra for a Phalaenopsis of high quality. Production of Phalaenopsis has grown over the past year and it is expected that this growth will continue in the coming years.

Anthurium and certainly Phalaenopsis are still relatively unknown to the general public, but one conclusion can be drawn after this trade fair: they love our products here!

Johan van Vliet
Sales Support

Irapuato

Mystique

A mysterious newcomer in the pot Anthurium assortment. This double-coloured pot Anthurium has an appropriate name. The variety has something mysterious about it, and this is mainly thanks to its flowers.

If you observe the plant closely, you will notice that each flower has a different appearance. The colour ratio of each flower is different, as a result of which the dominance of red and white varies. The flowers not only have a red spadix, they are also red veined and seem to have a red blush/lip.

Thanks to its double-coloured flowers, there is something different about Mystique®. This pot Anthurium is extremely suitable for 14 and 17 cm pots. The variety is cold tolerant and has a good vase life.

The plant structure is slightly heavy and it is rather a challenge not to make the variety 'too thick'. Do not plant Mystique too soon, as this will be at the expense of the amount of flowers and the flower size.

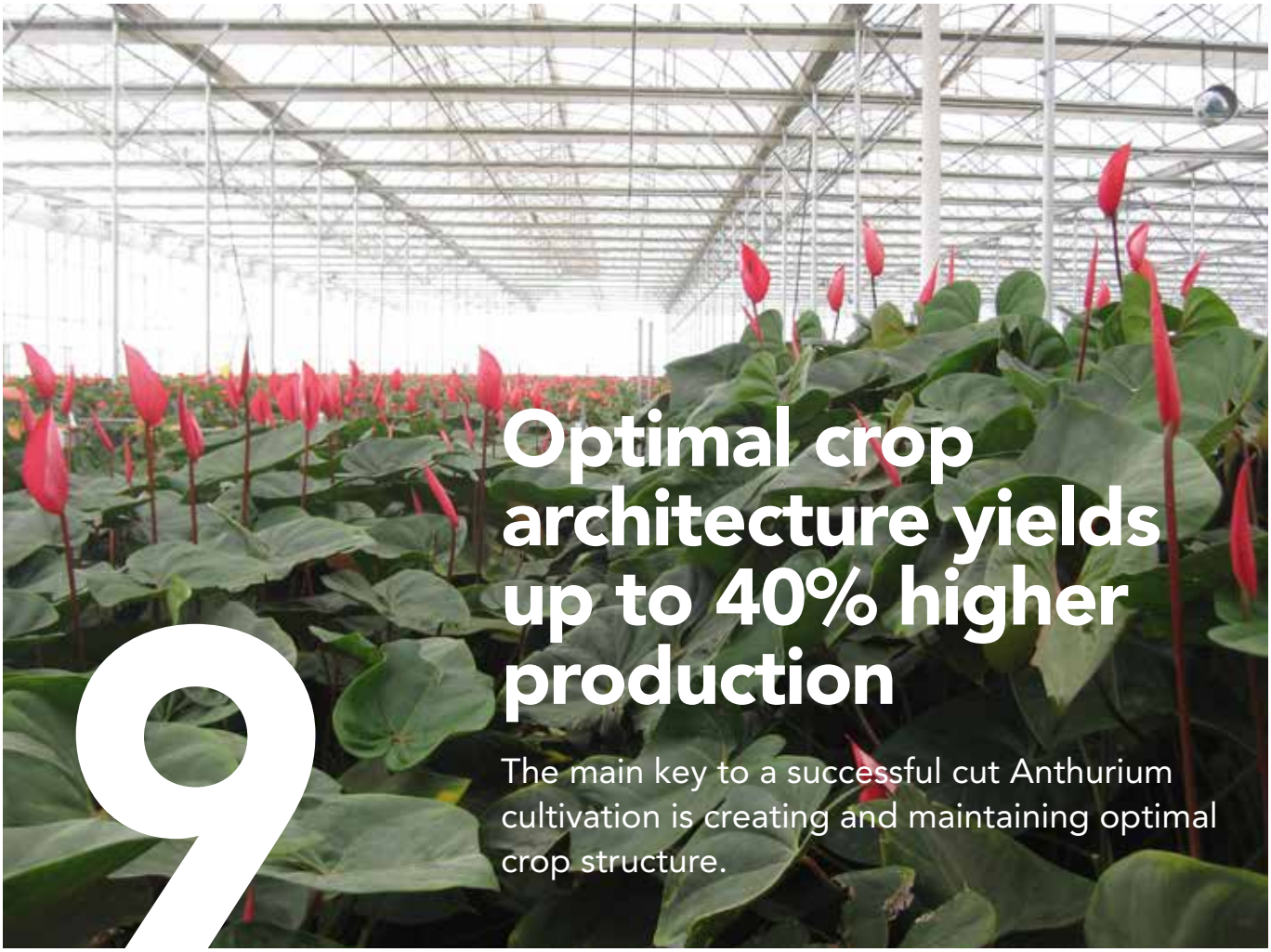
Production of this new variety has already started and the first test plants are immediately available. Order plants from your sales manager and let us know whether you are as excited about Mystique as we are.

Richard Smit
Sales & Product Manager, pot Anthurium

Mystique® (ANTHFAXI)

Colour	white/red
Flower size	large
Pot size	14 and 17 cm

CULTIVATION TECHNIQUES



9 Optimal crop architecture yields up to 40% higher production

The main key to a successful cut Anthurium cultivation is creating and maintaining optimal crop structure.

IMAC
BUREAU IMAC BLEISWIJK BV

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

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Optimal crop structure yields up to 40% higher production

The main key to a successful cut Anthurium cultivation is the creation and maintenance of optimal crop structure.

Bad incidence of light

Good incidence of light

A cut Anthurium crop has an LAI (Leaf Area Index) of 3 to 4. This means that the crop has 3-4 m2 leaves per square metre of greenhouse surface. Thanks to suitable crop structure, all leaf layers can intercept an optimal amount of light. Also in the lower leaves photosynthesis will increase and the total crop assimilation will reach a higher level. In addition, the lower leaf layers also receive more radiation energy, as a result of which the plant parts in the crop have a qualitatively better structure. This has several consequences, because the plant produces:

- more flowers

With increased assimilation, more sugars become available and the production per plant will increase. There is also more space for cuttings. Extra cuttings automatically imply more flowers in the case of sufficient crop assimilation. All these factors together can ensure that production is higher by up to 40% than with a traditional cultivation.

- larger flowers

When the number of plants per square metre remains the same because surplus cuttings are removed, the extra assimilates will lead to larger flowers.

- fewer second types

Flower buds are better able to grow through the crop, as they find fewer large leaves in the growing phase. As a result, the number of bent stems decreases. The flowers and buds also experience less impact from the crop while growing, as a result of which damage to flowers and buds will decrease.

- a shorter crop

As more light reaches the crop, the internodes stay shorter and the crop stretches less quickly. A shorter crop requires less labour and production improves because the plants grow straight for longer.

Combination of leaf halving and young leaf breaking

Optimal diversity by halving the leaf

Situation after two-and-a-half years, to the left, halving leaves and breaking young leaves; to the right, only halving the leaves

Creating the proper crop structure

Optimal production calls for proper crop structure of the plant. A distinction can be made between the structure of the plant immediately after planting and an adult crop.

Young crop immediately after planting

First, the crop should grow a dense cover. The small lower leaf does not have to be removed. When the new leaves reach approximately 30 x 15 cm, they can be halved. From this point the new leaves can be halved continuously.

If the crop grows too dense, you can start by removing leaves. This can be done in two ways. First of all, the third or fourth leaf can be removed from above, which will open the crop more. Secondly, you can start by removing the small lower leaves. As the crop gets older and fuller, the higher leaves can be removed. The first option gives more diversity and improves the light penetration in the crop, but is more difficult to execute.

Existing adult crop

You can start immediately by halving young leaves. The older tough leaves can be halved by cutting them with large scissors. Please take hygiene requirements into account. Leave a minimum of three halved leaves on the plant.

Maintaining the right crop architecture

Young leaf breaking can be useful when maintaining and improving crop diversity. By combining the traditional leaf-halving system (continuously halving the leaves) with young leaf breaking, an optimally-structured crop can be achieved. This can be done by breaking away every second young leaf. This means that leaf one (viewed from above) is halved and the new leaf (number two) is broken away. Leaf three then needs to be halved.

Number of leaves per plant

The number of torn leaves per plant ultimately depends on:

- the variety, which determines the leaf format, internodes and length of the leaf stalk;
- the number of plants per square metre;
- the size of the leaf tear: 1/2 , 2/3 or 3/4.

The number of halved leaves per plant will often range from:

6-8 torn leaves in young crops (including all the lower leaves);

Three torn leaves in varieties with a large leaf (Tropical®, Calisto®, Marysia® etc.);

4-5 torn leaves in varieties with smaller leaves (Midori®, Moments®, Tropic night®).

The total leaf occupation of the crop ultimately determines how much leaf is to be kept per growth tip.

1/2 leaf

2/3 leaf

3/4 leaf

Example of leaf dimensions after tearing

Traditional leaf cutting

This method does not offer the advantages of the techniques described above, but if the sale of leaves represents more than one-quarter of the crop turnover, then traditional leaf cutting can still be the best choice financially.

Maximizing space on the pathway for optimal crop architecture

By leaving the paths optimally occupied with leaves, the crop surface is often enlarged and the crop assimilation increases. This can be achieved by putting the leaves under the wire and keeping the flowers behind the wire. In addition, with falling crops the plants should not be guided to the middle of the bed, but allowed to fall along the length of the bed. Lower the upper crop wire so the leaf can take advantage of the open space on the path.

Cuttings

When, within 6-9 months after planting, more than one cutting per two plants takes place, the superfluous cuttings need to be removed. If more cuttings are left, the competition between the main plants and the cuttings becomes too fierce. The consequence is that the main plants do not develop properly.

There are two types of cuttings: normal cuttings and eye-cuttings. Normal cuttings are young plants that develop down at the base of the plant at the separation between the substrate and the air. This type of cutting grows slowly and is not very productive, as it receives little light. Eye-cuttings, on the other hand, originate at the growth tip of the plant. They are vigorous and can come to flower production in a few months' time, because they benefit from the assimilates made by the mother plant.

The formation of this type of cutting can be stimulated easily in young crops (0.5-1.5 years) by:

- implementing optimal crop architecture (see article);
- starting in the optimal growth season with young leaf breaking (in Europe, from midway through February until the end of April). By removing young leaves, more assimilates become available for the cuttings. The formation of auxin (a plant hormone made by young leaves) is also prevented. Auxin also prevents eyes (from which the cutting originates) from growing.
- seeking the maximum light level (10-12 mole/m2/day at crop level), maintaining a relatively low 24-hour temperature (about 21ºC) and ensuring other climate conditions are optimized (RH and CO_2).

The following table shows an overview of the climate parameters suitable for eye-cutting formation in combination with young leaf breaking:

Leaves on the path ensure optimal crop assimilation

Optimum climate parameters for the formation of eye-cuttings			
		Desirable	
	Day	Night	2 4 hours/sum
Light	400 µmol/m²/s / 20-25klux	-	10-12 mol/m²
Temperature	<25°C	19°C	21,5°C
CO_2	800 ppm	-	-
Moisture deficit (MD)/RH	6 gr/m³ / 80%	>2 gr/m³/<95°	-

By following the information in this article, your cut Anthurium cultivation will achieve optimal crop architecture. This should lead to an increase in production of up to 40%.

If you have any questions or would like to receive any complementary information, please contact Bureau IMAC Bleiswijk BV.

André Lont
Bureau IMAC Bleiswijk B.V.

Eye cutting on the mother plant

Measurement is the key to knowledge

The cultivation of crops in the greenhouse horticulture sector requires optimal control of the greenhouse climate. The circumstances under which a crop grows, must be as ideal as possible for a cultivation to be as cost-effective as possible. Good control of the greenhouse climate is only possible when there is close monitoring of the climate factors such as light, temperature and humidity, incoming and outgoing radiation and the CO_2 level of the greenhouse. Things like temperature and moisture are already measured in most greenhouses. These are the basic measurements that are absolutely necessary. In this article, specific attention is paid to the sensors that measure climate control to the next level. You will also gain more insight into the measuring process.

Light and radiation meters

The amount of radiation or light can be measured both outside and inside the greenhouse. An outdoor meter is common practice, which measures the global radiation. Both the light and the heat radiation are measured and the so-called 'global radiation' is expressed in watts per square meter (W/m²).

The next step is measuring the amount of light in the greenhouse with a light meter, also called a PAR meter. This meter measures the light inside the spectrum (400-700 nm) with which the plant grows best or the photosynthesis is highest. In reality, the amount of light particles (photons) per time unit for a certain surface is measured and expressed in micromoles per second per square meter (µmole/s/m²). With the measurement of an indoor PAR meter it is possible to screen with much more precision and to monitor for the optimal light level and the optimal light sum.

NOTE: As PAR meters can start deviating easily, it is advisable not to control the screens directly based on the PAR meter, especially in the beginning, but start off by observing and monitoring on the basis of the outdoor radiation meter.

Crop thermometer or plant temperature meter

Besides the temperature of the greenhouse air, the temperature of the crop or the plant is also very important. The temperature of the plant is measured with an IR (infrared) camera. The thermal radiation (IR radiation) emitted by the plant stands for a certain temperature of the plant. The plant temperature depends on the greenhouse temperature in combination with the incoming and outgoing radiation.

Crop thermometer

During the day, the plant temperature is often higher than the room temperature, while at night the plant temperature is often lower due to outgoing radiation. Especially when the sky is clear, the difference between the greenhouse temperature and plant temperature can be considerable. By providing more insight into the plant or crop temperature, it is easier to anticipate the situation. For example, by closing the screen or energy screen sooner, a sudden drop in the temperature of the crop can be avoided.

Hygrometer

NOTE: The camera has a fixed position. In the event of a mobile cultivation system, it may be that the place where the camera measures is empty, which will lead to the wrong measurement. Monitor this closely at all times!

CO_2 measurement

When CO_2 is dosed in the greenhouse, it is advisable to measure the CO_2 level in the greenhouse as well. Only then is it possible to dose better, in a controlled way, in order to achieve as stable as possible CO_2 concentration in the greenhouse air. It

CO_2 meter

is important to prevent the CO_2 level from being too high, but certainly also not too low. Both can result in a slower growth speed.

Irradiation and outgoing radiation

Irradiation is a common feature. We feel it when the sun shines or when we see the light. However the 'outgoing radiation', which is always present, appeals less to the imagination. Due to outgoing radiation, objects (including plants) lose energy in the form of heat. What is less known is that this is always the case, regardless of the temperature, the time of the day or the season. Outgoing radiation depends strongly on cloud cover. When it is cloudy, the outgoing radiation will be limited and when it is clear, the outgoing radiation will be considerable.

Outgoing radiation is expressed in watts per square meter (W/m²), like irradiation. A 'pyrgeometer' measures this outgoing radiation. The meter is installed indoors, unlike the radiation meter. Under clear and ideal circumstances (outside), the outgoing radiation from earth varies between 140 and 270 W/m². In the greenhouse, the outgoing radiation is inhibited by the screen and the greenhouse cover. The extent of outgoing radiation is influenced by the temperature difference between the object that emits (for example, a plant) and the object to which it emits (for example, a screen). Subsequently, this screen emits to a second screen or the greenhouse cover, etc.

If the outgoing radiation is too high at a certain moment, you might decide to close the screens to prevent the greenhouse and the crop from cooling down. With a pyrgeometer it is possible to really anticipate this cooling, compared to an infrared meter. Another application is to determine whether the weather conditions are clear or cloudy. If the outgoing radiation is low, it can be assumed that it is cloudy. The incoming light is then largely diffuse. This allows you to let the screens work in another way. With diffuse light it is possible to allow the entrance of more light than with direct light.

Sensors above the screen

Sometimes it is hard to establish at which point in time a screen can be opened or to what extent venting is necessary. When it is known what the temperature and humidity are above a closed screen, a more accurate assessment can be made of the consequences of opening a gap

Two different IR cameras

in the screen, opening the screen and/or using the ventilation. This is a very good way to further refine the greenhouse climate control. When, for example, the absolute humidity (AH) is lower than that of the greenhouse air around the plants, it is easy to dehumidify by opening a gap in the lower screen.

Weighing devices

During the cultivation of pot plants an electronic weighing scale can be used. These scales weigh several pots constantly, as a result of which a good representation can be given of any decrease in weight due to evaporation. This is an extra tool to help determine even better when irrigation is due. The measurement is generally transmitted via a Wi-Fi network to the climate computer.

Plant sensors

In the cultivation of Phalaenopsis in particular, plant sensors are sometimes used to determine whether the plants are feeling 'comfortable'. A sensor is connected to the leaf, measuring the fluorescence (light reflection). By measuring the exact amount and colour of the reflection of the leaf, it is possible to predict the extent of photosynthesis by the plant at that moment. This all sounds great, of course, but the interpretation of these figures is not easy. Often the measured values are compared to a model that has been reached from a large number of photosynthesis measurements. This comparison then shows a value for the photosynthesis.

NOTE: Often only one plant or one piece of leaf is measured, which has to represent an entire department or greenhouse. In addition, the plant processes are directly influenced by the measurement. It is not easy to draw conclusions about plant growth on the basis of this measurement, though there is no doubt that it can be an excellent addition to all the other information acquired from the sensors.

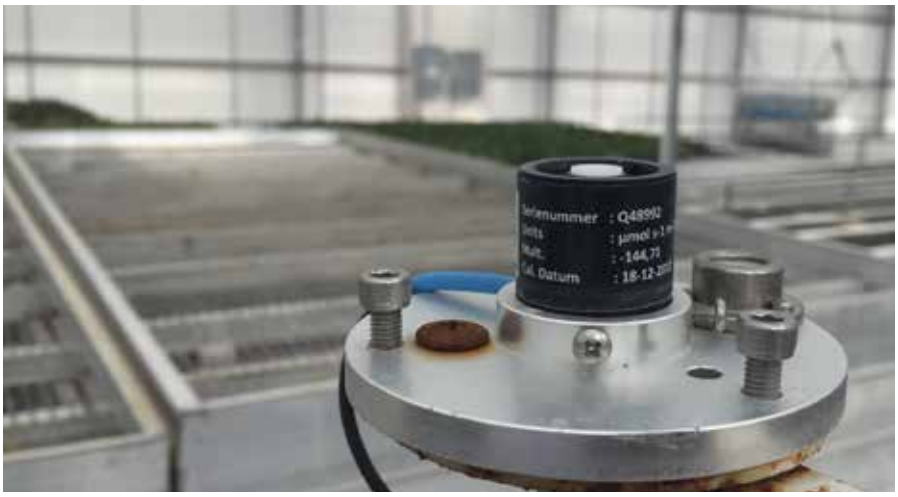
Porometer

A porometer is a device that can determine the exchange of gas of a leaf. It is a hand meter, so it is used to measure a certain moment in time. It is a beautiful tool to learn how the plant copes with the circumstances of that specific moment in time by taking several measurements at other times under other circumstances (think of light level, temperature, humidity, CO_2 level, etc.). On the basis of this measurement an estimate can be made of the plant assimilation at that moment.

Control and calibration

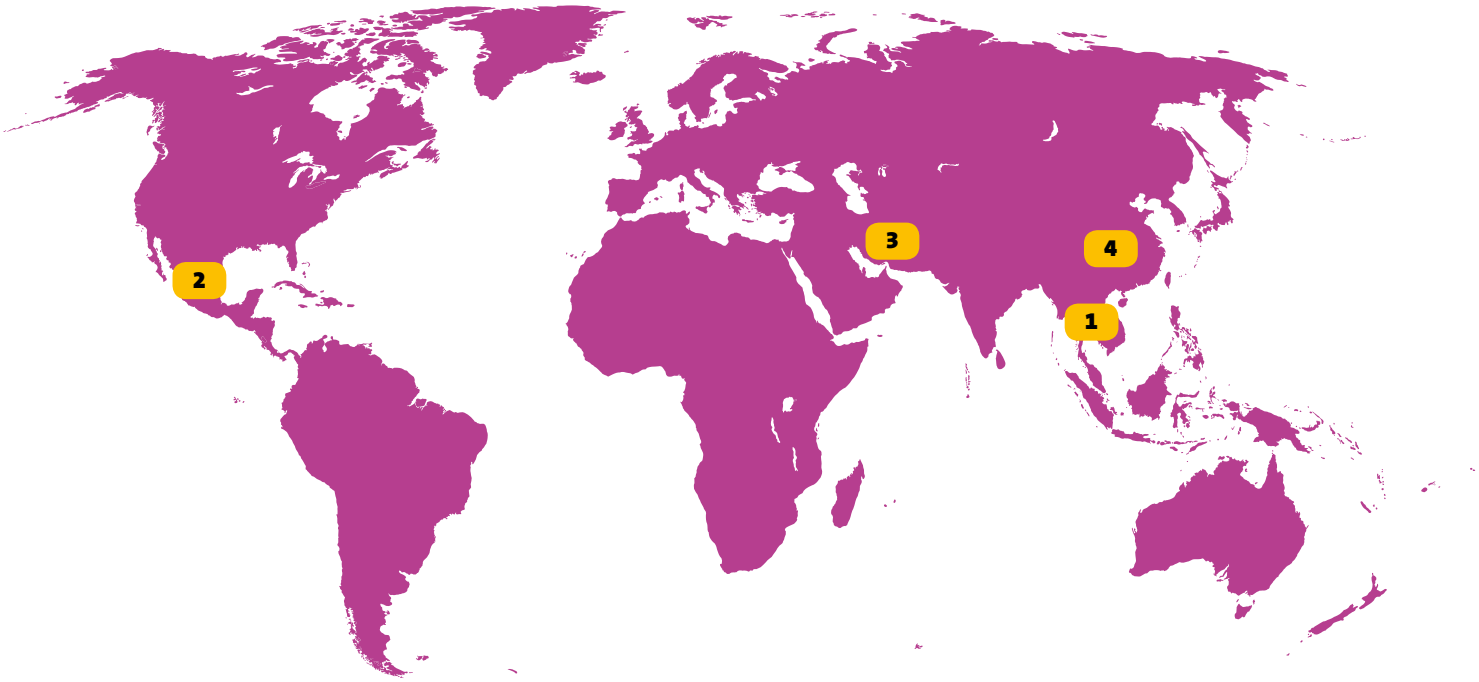
It almost goes without saying, but it is very important to remember that measurements are actually an accurate representation of the situation at a specific time. The measurements of all measuring equipment, no matter how advanced, can start deviating over time. Light meters (PAR sensors) are the most sensitive to this. It is therefore very important to be completely sure of the accuracy of the measured values by checking the sensors for contamination and controlling them yourself. In addition, it is advisable to have the PAR sensors calibrated at least once a year and the other sensors once every two years.

Menno Gobielje
Bureau IMAC Bleiswijk B.V.



Two different PAR meters

Trade fair overview from February to May



1. Horti Asia
Bangkok, Thailand
15/03/2017 – 17/03/2017

2. CA Spring Trials
California, USA
01/04/2017 – 06/04/2017

3. Iran Green Trade Fair
Theran, Iran
21/04/2017 -23-04/2017

4. Hortiflor Expo IPM
Shanghai, China
10/05/2017 – 12/05/2017

Colophon

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