

BREEDING BUSINESS

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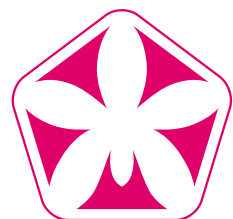
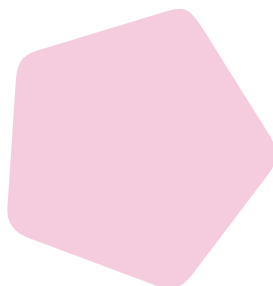


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Phalaenopsis from autumn to winter

The last days of autumn are upon us. The days are getting shorter, and we are becoming increasingly dependent on our assimilation lighting in order to get enough light. This will remain unchanged for the next three months (i.e. until the end of January). During the shortest day of the year on the northern hemisphere, 21 December, there is no reason to expect an excessive peak in light that could cause damage. If such a peak were to occur, this will not be until the first or second week of January, when the plants are in their cooling and/or flowering phase, when, on clear days, the sun becomes more powerful again between noon and 2 p.m. and the RH in the greenhouse drops too much. This is more unusual during the vegetative phase, because the transparent screen will remain closed to facilitate higher target temperatures (and taking into account today's energy prices!).

It is difficult to achieve the desired light intensity when the weather is overcast. Nevertheless, switching on the lighting before 5 a.m. makes no sense. The main reason for this is that the plants open their stomata after having been exposed to light for about 9 hours. It is better to give them a maximum amount of light in the daytime, with the aid of natural daylight. In the darkest time of the year, this is from 11 a.m. to 2 p.m. The combination of assimilation lighting and natural daylight is more effective than assimilation lighting alone. You can also feel this in the top-most leaves. They become slightly limp after 2 p.m. because this is when the stomata open up to absorb CO_2 . In this case, you should increase the RH to prevent the extraction of too much moisture from the leaves. This can, of course, cause leaf burn. Remember also that the stomata will remain open longer to absorb CO_2 . This is also a good time to start increasing the concentration of CO_2 up to 700-800 ppm. Whatever you do, do not

give the plants more light. More light increases the leaf temperature and that only makes things more difficult for the plant. Moreover, when the RH is too low, plants are likely to close their stomata again. And that results in less growth. Humidity in the greenhouse can become excessive due to a decrease in natural light and reduced ventilation in response to colder temperatures outside. This is particularly the case when the outdoor temperature remains at around 10 to 15°C. Despite the high energy prices, superfluous moisture must be extracted from the air to keep the plants active. The high energy prices are a reason for many growers to reduce ventilation and keep their screens closed. However, going too far in this can be dangerous. We have seen this more frequently in the past. Use the information distributed under 'The Next Generation Cultivation'. Screens can certainly be kept closed more frequently, but it is best to open the ventilation outlets situated above them, particularly in greenhouses with a glass roof. Glass roofs can function as a condenser when it is cold, provided that the moisture is extracted.

“For many, these high energy prices are a reason to reduce ventilation”

Another way to save energy is to take a closer look at the heating temperatures. Do you really need to raise the temperature to above 28°C during the vegetative phase? Or even 27.5°C? Your lighting will ensure that the plant temperature will always be 1 - 2°C higher than the ambient temperature in the greenhouse. The danger lies mainly in the moment when the lights go out. If this happens at the end of the afternoon, after the sun has set,



the temperature in the greenhouse can drop rapidly.

This is particularly the case if, at the same time, a wintry shower falls bringing sleet or hail. Apart from that, we know that the leaf temperature is 1°C, and sometimes 1.5°C, below the ambient temperature in the greenhouse due to evaporation and a deficiency in light. It is particularly then that the plant temperature can fall too rapidly, and this causes a high risk of early spikes emerging in the vegetative phase, particularly in autumn, until the end of January. The plants are particularly sensitive to this until Christmas. After Christmas, this sensitivity will decrease as the day length increases. This effect will have disappeared entirely after Valentine's Day.

It is therefore important to turn up the heat, particularly through the overhead heating system, before turning off the lighting. Screens must also be closed before switching off the lights. Accept that this will temporarily raise the temperature just a bit, and do not ventilate immediately with a view to lowering the temperature. It will cool down anyway. This will prevent the formation of early spikes. Aside from this, the misting system must remain switched on. Increase the setpoint of the mist to 65%. This can be lowered to 60% in the event of frost and/or snow, and certainly from mid-February onwards.

Fertilisers

Remember that salinisation of the top layer of the soil may occur after prolonged assimilation lighting and/or under the influence of heating. There are various ideas about the use of fertilisers. Some growers prefer higher EC values of 1.2 to 1.5 and irrigate with clean water after applying fertilisers to inhibit salinisation of the top layer. Irrigation with clean water

at least once a month is, in this case, imperative to flush out the pot. This always gives the roots an enormous boost and reduces saline build-up in the top layer of the pot. If you irrigate with clean water, remember that it will never be completely clean for the plant, considering that some of the salts from the top layer will nevertheless be dissolved into the water. When lower EC values of up to 1.0 are maintained, the roots will look better and be more active. If greater quantities of fertiliser are given a few times, you will notice what you could call a short-lived growth spurt. The plant will not find it necessary to grow more roots.

“Make sure your irrigation water isn't too cold!”

Lowering the EC by 0.1 - 0.2 to prevent salinisation of the pot is a good idea, particularly in the upcoming period (late November). Urea can also be reduced by 25 to 50% when a lower light intensity is realised. Less light requires less nitrogen. When urea is given, its conversion to ammonium causes the EC in the pot to rise. And when the amount of urea administered is higher, the EC in the pot may be higher than the amount administered. You can switch back to the normal schedule from about the third week of January onwards. That is 4 weeks after the shortest day of the year. All in all, these values will be reduced for a period of 8 weeks. Remember that your irrigation water should not be too cold, particularly if this is obtained from under a layer of ice. Keep it at a minimum temperature of 20 degrees. Also keep an eye on the differences within the plant, which should be as small as possible. So, try not to let the pot, leaf and ambient greenhouse temperatures vary too much. This is easy to measure with the good sensors that are available nowadays.



Cymbidium

Early varieties

The cold period for both cut flowers and pot plants that will be flowering around September and October 2022 should be from November 2021 to February 2022. The average 24-hour temperature should be around 12.5 to 13°C for a duration of 90 to 100 days. The plants should be cleaned and/or spaced wider apart at the beginning of this cold period. This must be finished at least one month before the temperature is increased.

The average 24-hour temperature should be around 12.5°C (13 - 14°C during the day and 11 - 12°C at night). In extremely cold weather, temperatures of few degrees lower can be maintained temporarily for up to two weeks at most to save energy. That can be reduced to 7°C for a 24-hour average. This may, however, be too low for some varieties. Make sure that the climate is sufficiently active. The crop must continue to evaporate and absorb water.

At an outside temperature of 12°C and higher, the crop will have to be activated by means of extra ventilation and by maintaining the pipe heating system at a minimum

temperature for 1 or 2 hours in the morning. An excessively short or warm cooling phase results in a delay and decrease in production. Moreover, the flowering period of the crop is much longer. Give the plants clean water with a maximum of 0.3 EC in the cooling phase. Always check the drain for EC, pH and quantity!

From mid-February onwards, the average 24-hour temperature should reach 20°C. This can be delayed by 2 weeks for pot plants. It is important that the desired overall temperature is achieved. If you are 'lagging behind' due to a delay in starting or because the 24-hour average temperatures are too low, you can 'catch up' by raising the 24-hour average temperature from 20.5 to 21°C and spreading this out over a longer period of 3 months. Maintaining temperatures higher than 21°C makes no sense. This leads to a loss of production due to the drying out of spike buds. You will see this a bit later, because instead of spikes new shoots will be visible.

Raising the temperature earlier in January can produce a negative effect on some varieties. A plant's energy

consumption (sugars) will exceed its production at higher 24-hour average daytime temperatures on shorter and more overcast days. This causes the nodes from which the spikes should have grown to dry out - which results in shoots. Halfway through February there will be plenty of natural light.

A perforated anti-condensation film screen facilitates the realisation of a higher plant temperature in the period from January to March, particularly in cold weather.

“A closed energy screen allows higher levels of humidity and CO₂ to be maintained.”

It is important that windows or ventilation openings are opened only gradually on sunny days to prevent temperatures from rising excessively. Close them in due time halfway through the afternoon to ‘trap’ the thermal energy and, by doing so, save energy. You can do this as early as 3 p.m. at this time of year. Keep an eye on the 24-hour average daytime temperatures achieved in different periods of the season. A closed energy screen will help you maintain higher humidity and CO₂ levels.

Christmas varieties

The spikes for Christmas are tied up and twisted in. Make sure it does not get too cold in the greenhouse in November and December. This can cause Botrytis to appear on the flowers, or red spots on the top of the flower buds. This is caused primarily by excessively cold nights.

Pay attention to water consumption in the coming period. There are cultivars that flower around Christmas and

absorb a lot of water during their spike elongation phase. If you grow ‘dry’ and the weather becomes sunny, you will need to schedule another drip irrigation round. This prevents bud blast. However, if the weather remains mild and humid, and you grow ‘wet’, it is better to skip a watering round to preserve the roots of some varieties.

Measure the amount of irrigation water and the drain each week, and check the drain EC for individual varieties. In addition, the EC drain will show you if this is rising. In this is the case, the plants will take up fewer nutrients or perhaps even none at all. The answer to this is to lower the EC! The water must be at least 12°C.

After flowering, clean these varieties and, if necessary, space them wider apart or move them. This must be done before Valentine’s Day. If you wait until March to do this, it will result in a delay in flowering for Christmas 2022 or even production losses.

Spacing the plants wider apart in due time ensures that they will be better acclimatised before it becomes too hot and too dry (low RH). An RH that is too low leads to spike bud dehydration. Water uptake is always 50% less than normal during the first 14 days after moving Cymbidium plants. From the beginning of April, the average 24-hour temperature should also be 20°C. The greenhouse will need to be heated in cold or poor weather conditions.



Mid-range varieties

With regard to the mid-range varieties, the cold treatment for flowering before the beginning of 2023 should be planned during spike elongation in the next flowering season. The plants will flower from November onwards. This happens in an almost 'natural way'. In 2022, Easter is on 17 April, which is quite late. Allow the plants to develop at their own pace. There is no need for extra heating to accelerate the process. And that is no bad thing with the current high energy prices.

The question is whether you want to heat your greenhouse at all. Easter and Mother's Day are very close together in 2022. Are there any varieties whose flowering can be brought forward to the end of February? The decision to do this must be made in November. You need to maintain higher temperatures for this purpose. That makes it a difficult dilemma. Ensure adequate evaporation equal to at least 3 litres/m²/week.

“Allow the plants to develop at their own pace. There is no need for extra heating to accelerate the process.”

Late varieties

With regard to late varieties, a 24-hour average temperature of 20 to 21°C is still maintained to block spike elongation. At the same time, the new shoots which have split off are encouraged to keep growing before the plants start flowering in spring 2023. These higher temperatures to ensure flowering in June and July must be maintained until Christmas, despite the higher energy prices. If this is not done, your entire schedule will collapse, and your late varieties will be ready earlier than planned – and in a period that is not as attractive to consumers. Some growers even keep this up until the first weeks of January.

However, if you want your plants to flower in June and July it is important that you can get daytime temperatures that are too high to drop during that period, using at least a good misting system. This will prevent temperatures from rising excessively, which would have a negative effect on quality during flowering.

The gradual drop in temperature before the cold treatment and the delay in flowering (a combined action)

must be spread out over a duration of 10 to 14 days. Cold can be very cold in this case but this depends on the outdoor weather conditions and the humidity.

If it is freezing, 10°C is possible. Evaporation is more than sufficient under those circumstances. If it is too warm for the time of year, you will nevertheless need to switch the pipe heating system to the minimum temperature each day for 60 to 90 minutes, in addition to ventilating profusely, to activate the plants. In the late section, the crop can still take up lots of nutrients until at least mid-January (e.g. 0.7 EC irrigation and 0.4 EC drain). If the EC drain increases, cut the EC by half immediately! Keep monitoring each week on EC and drain pH, making sure that the plants evaporate an average of approximately 2.5 litres/m²/week. This is almost as much as an average day in summer!

Conclusion

The humidity is often too high in the period leading up to Christmas, Ensure adequate ventilation and an active climate. 'Next Generation Greenhouse Cultivation' offers good methods for achieving a sufficiently active climate without too many fluctuations and with a more stable plant temperature.



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Breeding orchids
is a quest for
perfection