



## Culture methods during flowering period

Our large collection of varieties and its hybrid nature means horticulturists can programme flowering very accurately and in batches throughout the whole of the sales season.

Flowering induction has already started for your cyclamen, as soon as the first leaves appear, about 15 weeks after sowing.

However, the maturation of the flowers can be spoiled or optimised both in quantity and quality by different factors throughout the growing period.

**Here is some advice to help you maximise the quality of your flowering:**

1. **BALANCE FOLIAGE / ROOTS**
2. **LIGHT AND TEMPERATURE**
3. **WATERING**
4. **RELATIVE HUMIDITY**
5. **FERTILISER**



### \_\_\_\_\_ 1. **Balance foliage / roots**

The right balance between the root system and the vegetation guarantees a successful flowering.

**How can you check** that your cyclamens satisfy the conditions required for a good flowering?

- the **roots** must be uniformly distributed throughout the pot and the tips must be white, hairy and active.
- the **leaves** must be numerous with short stalks and without a vegetation stage between old and new leaves.



*White, hairy and active roots*



We talked in a previous file about the susceptibility of cyclamen to get root asphyxia. This problem puts a stop to an easy absorption of nutritive elements during flowering.

Numerous capillaries ensure appropriate and balanced absorption. A lack of capillaries is often due to excessive growth or over-watering during the vegetative stage. An adequate balance between leaves and roots will also allow a larger bulb to develop. This contributes to greater longevity for the consumer.



*Satisfactory bulb growth*

### What can be done if the root system is weak prior to flowering?

1. It is strongly recommended, where the watering system allows it, that the doses of water supplied is **reduced but the frequency of watering is increased prior to the planned flowering period, especially if the roots are weak.**
2. Check that the EC level in the substrate has not increased above the 'at risk' level ( >1 ms/cm, 1/1.5 method ) and **reduce the nutritive solution's conductivity by at least 50% to stimulate new roots.**



## 2. Light and temperature



The light is fundamental at the flowering stage.

The correct amount of light ensures photosynthesis without increasing the maximum temperatures in the greenhouse or in the plant tissue.

If the temperature increases through excessive radiation, the cyclamen interprets this as a prolongation of its vegetative stage. This results in increased water demand, growth in the plant's volume and, finally, delayed flowering.

*Undesirable prolongation of vegetative stage*



**The aim** is to control this radiation to limit heating and have average night/day temperatures of 15/20°C (59/68°F) which stimulate flower growth.

The ideal is to stay at about 40,000 lux (4000 fc), especially if the maximum temperature exceeds 25°C (77°F). This means we have to be careful not to remove shades too soon especially with the luminous and warm autumns that we have enjoyed in recent years. Another way of controlling radiation : mobile screens and/or ventilation to bring the temperature back to <20°C (68°F).

If the relative humidity allows it (<80%), the Halios® range is sufficiently vigorous during the flowering phase to flower even with minimum temperatures around 10/12°C (50 / 53.6°F). The Halios® Fringed range is especially recommended for growing in winter.

Some producers use the heat on purpose to produce larger plants and take account of the prolonged development period in their production planning. For example, in southern Europe, it is possible to extend the vegetative phase and produce plants that are suitable for 20 cm (8") pots by waiting for the optimal temperature for flowering. It should be noted that this requires to remove the flowers once or twice.



The light and heat control can be less rigorous for varieties with small or medium sized flowers. Their physiology is better adapted to higher temperatures during flowering without losing the foliage/root balance.

You still have to make sure the selected varieties are vigorous to avoid the risk of a 'stress' flowering; i.e.: flowering accelerated by heat before the plants have finished their vegetative development. The Metis®, Tianis® and Premium series are perfectly adapted to flower at the beginning of the season.



*Tianis® buds developing*



### 3. Watering

With the arrival of shorter days and lower temperatures, watering is reduced during the flowering phase. It is useful to establish **a constant adjusted water volume** by **reducing watering frequency during the flowering stage**.



The **volume** is determined by the variety selected, the pot size and the precision of the watering system. The **frequency** of watering is determined by the evapotranspiration from the plants.

Evapotranspiration depends on the combination of light and temperature which was discussed above. When the days are short, watering can be reduced to once every 2 - 3 days. Here again, the volume and frequency of watering depends on root quality.



*Stretching due to excess watering*

For Halios® varieties in plastic 1 - 2 litre pots of substrate, the doses fluctuate between a maximum of 100 - 150 cc per watering. For Metis® or Tianis® varieties in plastic 0.5 - 0.75 litre pots of substrate, the doses fluctuate between a maximum of 50 - 75 cc per watering. These doses are indications and must be adjusted to the other culture conditions.



### 4. Relative Humidity

As low temperatures arrive, especially at night, the risk of condensation in cyclamen crops will become greater. The **relative humidity** must be kept **below 80%** to ensure a minimum level of transpiration and avoid the risk of botrytis.

If the relative humidity is too high, the cyclamens' stomata reduce their activity to the minimum therefore transpiration is reduced, consequently this delays or reduces flowering.



*Botrytis damage*

To avoid this situation, you have to be as accurate as possible with watering to provide no more than the amount of water that the plant can transpire. Pay attention to drainage water which often makes a large contribution to overall humidity in greenhouses.

When a greenhouse is closed to ensure a minimum temperature (10 / 12°C) (50 / 53.6°F) and relative humidity exceeds 80%, the only solution is to **combine heating and ventilation** to dry the greenhouse to decrease relative humidity below 80%.



## 5 . Fertiliser

We have looked at how light, temperature and watering can be reduced when flowering starts in autumn/winter.

Fertilising needs also to be continued to ensure the good development of flower buds. This factor is the final complement required for continuous and abundant flowering that will be equally long-lasting for the consumer.



*Root asphyxiation and iron deficiency*

The most important element in fertiliser solutions is **nitrogen** (nitrate by preference - see our 'nitrogen' file in our newsletter no.2) which can be provided at concentrations of 100-150 mg per litre (ppm) in the water especially when watering frequency is reduced.

With lower average temperatures, nitrogen absorption results in larger flowers with more intense colours. The absorption of macro and micro elements such as calcium and iron is more regular when root quality is optimal.



In order to improve the regularity of nitrogen absorption, we recommend N/K balances of 1:2 with 200-300 mg per litre of K<sub>2</sub>O being provided. Excessive potassium provision (N/K ratio of 1:6) can prevent continuous and abundant flowering.

Because of higher average temperatures and watering frequency during the summer and autumn flowering period, feeding must be limited for the Metis®, Tianis®, Premium and Latinia® ranges. In these series, it is better to maintain concentrations around 75 - 100 ppm of nitrogen and be very accurate in watering management.