Zantedeschia Cut Flower

Before we explain how to grow Zantedeschia, we would like to inform you about following.
Zantedeschia is not an easy crop! We would like to warn you ahead.
Many growers started growing Zantedeschia, but stopped after the first year again.
Why? Mainly 3 reasons:
1. *Lack of knowledge*
2. *Lack of good planting material*
3. *Lack of time and attention to invest in this new crop*

We hope we can reach the serious grower who is willing to invest in this crop.
With our help and clean material, we can make a success of your nursery.
Below you will find general growing instructions that will help in growing Zantedeschia.

Soil disinfection

Use a well-aerated and highly permeable soil type. The best soils are sandy earth, brackish clays or potting compost with a pH of 6 to 7. Make sure the soil is free of Pythium or Rhizoctonia. “Clean” soil is essential! Our own research indicates that Erwinia is a secondary disease, which is caused by primary diseases such as Pythium or Rhizoctonia.
If Calla is to be grown in soil that has previously been used to cultivate Calla, you have to steam the soil! Failure to do so will lead to significant crop losses.
When using lily crates as a growing system, you must use fresh potting compost and disinfect/steam the crates.
If you need to steam the soil, you should also use chemical fungicides. Steaming also kills good fungi.
Make sure the soil is of the right texture. This is important for a good start in the early cultivation stage.

Phytium treatment:

Before planting, treat the soil as follows:		
AAterra	3 gr/m2	This is effective for about 6 weeks
After planting, the following can be used:		
Aliette	1.5 to 2 gr/m2	This is a preventive product. This can be added to the second or third watering. This product is used 2 or 3 times with an interval of 2-3 weeks between doses.
Potassium-Phosphide	5 ml/m2	Increases the plant's natural resistance to fungi.
Previcur	3 ml/m2	This is a remedial product; it should only be used when Pythium has been detected. Always wet the plant first before spraying the product onto the plant and then rinse with water.

Rhizoctonia treatment:

Apply by spraying shortly after planting:		
Rizolex	2 to 3 cc/m2	Apply by spray after planting in moist soil.
As soon as the plant breaks the surface, the following can be used:		
Amistar	250 gr/ltr azocystrobine	Spray onto the wet plant and then sprinkle the plant with water. According to our suplier Ortiva contains Amistar 250gr/ltr azoxystrobine.Advice 0,5-1 liter/ha.

Planting

Our tubers have been disinfected and prepared for optimum flower production. They can be planted straightaway.

Planting the plants too close will disturb the plants. It will lead to lower flower production caused by lack of light per plant..
The planting depth, depending on the tuber size, is approx. 10 cm. We do not recommend shallow planting as the root system will develop close to the soil surface. This can cause problems when dry spells occur during the cultivation period.

Size	Quantity netto /m2	Quantity gross /m2
14-16	22	15,4
16-18	18	12,6
18-20	15	10,5
20-22	13	9,1

Greenhouse climate

TEMPERATURE

The greenhouse should be heated to 16 C. The ventilation temperature is 18 C. The optimum temperature during the day (when the sun shines) is 18 to 20 C and the optimum temperature at night is 16 to 18 C. A lower night temperature is important for optimum flower production. This makes the colours of the pink and orange varieties more intense. NB! Too low a greenhouse temperature during the flowering period leads to greening in the flowers.When the temperature drops below 12 C fading of the colours and nipping of the flower can occur.

HUMIDITY

The humidity during spring can fluctuate a lot. Prevent a humidity of less that 60%. This can stress the plant and make it more vulnerable to disease. A humidity of more than 75% causes the plant to be more vulnerable to Rhizoctonia. Furthermore, Botrytis can also infect the leafs at a high air humidity. Big fluctuations of humidity will not be beneficial for the flower production as well. It is better to have a higher day temperature with a higher humidity level, than a lower day temperature

including a (too) low humidity. Poly tunnels can be very good greenhouses for Zantedeschia. The humidity stays on a more stable level, which is good for Zantedeschia.

LIGHT

Light is very important for Calla cultivation. Light influences the quantity of flowers the tuber produce. Light intensity influences the clarity of the flower's colour and the length of the plant. A reduction of flower production can be obtained when the screens are closed too much or during low light periods. Less light will also reduce the colour intensity of the flowers. A high day and night temperature can also reduce the colour intensity of the flowers.
Screens are often used when sunlight levels exceed 700 watts. However, too little light can lead to reduced flower production and stress.

Watering regime

Watering is very important when growing Calla. The plant/tuber requires little water in the beginning. You should only water the plant more when the leafs start to unfold: after all the plant is now becoming more active and uses more water. Watering should preferably be done early in the morning. If a period of dull weather has been forecast, delay watering if possible. After the leaves have unfolded and the soil under the plant is no longer visible, water should only be provided via a droplet system. Test the condition of the soil beforehand and look at the weather forecast before watering.

Watering and Erwinia

Proper treatment and water management are important factors in preventing Erwinia problems when growing Calla. The first 6 weeks after planting are crucial to how the Calla lilies will develop in the greenhouse. The plant should develop a good root system. Excessively moist growing conditions in this period leads to an increased risk of infection by Pythium, Phytophthora and Rhizoctonia. As Erwinia is a secondary disease that is caused by primary diseases like Phytium, Phytophthora and Rhizoctonia, measures must be taken to prevent the latter. Phytium infections are often highly localised and attack the tuber's root system. Infection is indicated by the plant's leaves curling up in warm weather. Plants that have been infected will not grow as fast as healthy plants.

We advise you add a fungicide to the sprinkler water immediately after planting in order to prevent Pythium and Rhizoctonia. This can be repeated 2 or 3 times during cultivation, depending on the growth stage of the plant. Rhizoctonia occurs at the soil/air border. We recommend carefully uprooting the plant as soon as wilting stems, the first sign of infection, are detected. Rhizoctonia is indicated when the stem above the tuber is rotten or covered in slime.

ERWINIA INFECTION

Erwinia is indicated by a loose stem that becomes increasingly unstable until the plant collapses. The bottom of the stem also smells unpleasant. It is important that you identify the possible cause of the Erwinia infection. The plant is more susceptible to Erwinia infection when it is stressed. The main causes of Erwinia are: infection by primary fungi in the soil (Pythium, Rhizoctonia, Fusarium and Phytophthora), too much or too little water, too high an EC value, damage caused by weed exterminators and an RH above 80% or below 40%. Please report Erwinia infections to Könst immediately! You should also avoid walking among the plants as this can help spread the disease.

Re-use of tubers

Growers who want to re-use the corms, often grow dryer than growers who throw the corms away after picking the flowers. The reason for this is simple: If you grow on the dry side. You will have a lower drop off % by Erwinia. You also will have a lower production per tuber. The wetter you grow the more chance of Erwinia problems and a higher flower production per bulb. On the other hand, if you grow too wet, with more than 10% drop off by Erwinia. The production is low as well.

Re-use of bulbs is only done by growers who have temperature controlled preparation rooms. (Netherlands/California) Re-use of bulbs is not easy. Normally the production will be less.

Use of fertilizers

Using a good mixture of fertilizers is one of the keys to cultivating Zantedeschia successfully. You can grow the plant more vegetative or generative. We advise the schedule below. This is an advice for normal growth in the soil. A crop grown in Lily crates is different ! This schedule is a more generative kind of schedule.

It is important that you have the soil analyzed before planting. The soil analysis will help you choose the most suitable fertilizers.

Potassium phosphide is often used when growing Calla and has the additional benefit of increasing the plant's resistance to fungi.

mmol/l									umol/l						
NH4	K	Na	Ca	NO3	Cl	S	P		Fe	Mn	Zn	B	Cu	Mo	
<0,1	1,3	0	2,0	2,5	0	2,0	0,1		10	2	2	10	0,7	0,2	

Harvesting Flowers

The flowers should be harvested in the early morning or in the evening when the temperature is not too high and they should be placed in the cooling cell immediately. The flowers are harvested by pulling them up. This method adds 10 cm to the stem length and is much faster than cutting. When pulling the flowers up, you should grip the bottom of the stem not the middle!! This preserves the strength of the stem.

You have to make sure that the offshoots are not damaged when pulling up the flower!! Work carefully. If harvesting proves to be difficult, it is advisable to water plants early in the morning before starting to harvest. Dry cultivation can make harvesting more difficult and lead to plant damage. In this case just water them for a couple of minutes, and start picking them again. you will see this is a lot easier !

After bundling, the stems should be cut off in the white area. Make sure the auction buckets are clean!! Dirty buckets are a source of infection for the flowers. Add household chlorine bleach or Florisant 500 to the water in order to kill off any bacteria. All these measures are designed to increase consumer satisfaction.

In addition to the species and tuber size, the number of flowers per Calla tuber may also depend on the following: the age of the plant material and its freedom from viruses, preparation, Gibberline treatment, light intensity in the greenhouse, moisture in the soil and the care with which the flowers are picked.

FLOWER PRODUCTION

Factors that have a significant influence on production are:

- *Quality of the initial material*
- *Species*
- *Preparation and Gibberline treatment*
- *Use of fertiliser during cultivation*
- *Time of planting and light intensity in the greenhouse*
- *Plant density*