

Zabo Plant

LILIES FOR PROFESSIONALS

Cultivation guide

Cultivation guide for potted lilies provided by Zabo Plant (written by Luke Broersen)

In this guide we will inform you step by step what to do, at what stage of the process. Also, it will include some additional useful points.

CHAPTER 1: THE START

By receipt of the Lily bulbs

The bulbs will be received by you in frozen condition or already defrosted. De necessary treatments to make the lily flower, is already done by us.

If the bulbs are in frozen condition:

- Open the plastic bag in the crate with bulbs and peat moss
- Put the crates apart from each other to defrost them as equally as possible
- Let them defrost in a shaded space at 9-12 °C (48-53 F). NEVER warmer than 15 °C (59 F)
- Make sure the crates with bulbs are never in contact with direct sun. Because of these bulbs can suffocate or become soft.
- As soon as the bulbs and peat moss are defrosted, plant the bulbs. If you wait too long, the bulbs will dry out, with lower quality pot lilies as result.
- Once you defrosted the bulbs, you can NOT freeze them in again.

If the bulbs are already defrosted:

- Plant the bulbs directly after arrival.

USEFUL FACT

Flower buds and stem roots

Within the lily bulb, the plant with stem and foliage are almost totally initiated. But the flower buds will be initiated after planting the bulbs. The lily is one of the few ornamental plants that make new (stem) roots. The lily needs these roots for an optimal growth. So again, it is especially important that these stem roots can developed well.

The amount of flower buds which the lily eventually has, is very much depending on the first two weeks after receiving the bulbs. If you wait too long before planting the bulbs, irrigation after planting the bulbs or if you grow the plant at the start by high temperatures after planting, it will reduce your number of stem roots. And there for your bud count per lily stem and overall quality.

Which pot do I use?

There are a lot of different pots to choose from in ornamental plants. To have a good result in potted lilies, the following rules apply:

- Choose a pot with spacious volume. A lily likes that. An additional advantage is that when you deliver the finished product, it can hold more moisture.
- Use a pot where (sun)light will not shine through. A lily root cannot grow in light.
- Make sure there are enough holes in the bottom of the pot, which are at the lowest point in the pot. Otherwise the water will not flow out of the pot completely and the lily can drown.

By cultivation on a loose surface

- Make sure the surface is as flat as possible. By small differences you will face quality loss, because some plants do not get enough water and dry out. While other plants will become too wet with a risk of fungus diseases.
- Use pots with a highest possible base. So, you reduce the chance of suffocation when there is too much water concentrated in one spot (puddling).

By cultivation on a concrete surface or ebb- and flood systems:

- The height of the base from the pot is less important. Because the system will give the water equally to all pots and there should be no puddling.

Which substrate do I use?

For the cultivation of pot lilies, we recommend using a substrate which is as follows:

- Holds moisture sufficiently but is still airy.
- A pH between 5,5 and 6,5; At a lower pH, mix lime through the potting soil.
- You can fertilize with 1-1,5 kg/m³ potting soil Osmocote 14-14-14 and 1-2 kg/m³ Patentkali.
- Keep it moist, not wet. If it is too wet, the core by filling the pot will be too compact.

Planting of the bulbs in the pot

When the bulbs are defrosted directly plant the bulbs. Prevent the bulbs from drying out, with an uneven crop as a result. Work as follows:

- At the bottom of the pot, 2 cm (1 ")of potting soil.
- When you plant one bulb in the pot, make sure it faces upright in the middle of the pot
- By two or more bulbs, face the nose of the bulb towards the side of the pot while planting. This will fill up your pot nicely.
- The top of the bulb may never be above the halve of the pot.
- Cover the bulbs in the pot with a minimum of 10 cm (4") potting soil.
- Fill up the pot with airy potting soil. Do not press the soil down.
- After planting, directly water the pots sufficiently.
- Give water to the pot until the first water comes out of the bottom, until the potting soil is saturated. This is necessary to initiate the growth of the stem roots.

Pre-rooting

To develop the stem roots optimal, we need to keep the freshly potted pots in a cooling room. The ideal temperature is between 8-12 °C (47-53 F). In this period the sprout grows out of the lily bulb and will come above the potting soil after approximately two weeks. Check the development frequently. If the sprout seems to appear earlier above the potting soil, put them as soon as possible in the greenhouse. If you pre-root them hotter than the indicated temperatures, this will give you less stem roots. During this period of two weeks, you do not have to irrigate the pots. For your information, the stem roots are not yet visible during the pre-rooting phase. They will be visible when the sprout will grow out of the potting soil.

CHAPTER 2: THE CULTIVATION

Climate control

- The temperature in the greenhouse can be fluctuate from 15 to 22 °C. (59 to 72F) Do not drop the temperature at night too much for an optimal development. The bigger the day- and night temperatures difference, the taller the lilies will become. Also, it will lengthen your forcing time.
- Keep a maximum temperature of 25 °C (77F) in the greenhouse. In warmer climates we recommend checking the possibility to keep the 24-hour temperature as low as possible.
- Make sure you have a sufficient air circulation. You risk more chance of mildew and taller and weaker lily stems if there is too little air circulation.
- Give the plant as much (sun)light as possible. Only if the temperatures rise above the 25 °C (77F) or the foliage hangs down, sun screen is needed.
- If you have not enough natural light, please use assimilation light. The minimum growing light the lily needs per day is 10 mol/m².

Irrigation

- Check on a daily basis the moist level in the pots.
- When the stem roots are visible, do not water them too much but keep them moist at any time. If you grow them too wet, it will ruin the root structure and reduce your quality.
- After a certain amount of time, flower buds will be visible in the top of the plant. From this point you need to give more water. During this growing stage, the lily needs much more water.
- Dry patches in your greenhouse need to be watered by hand, to avoid these pots from drying out.
- Check the irrigation system on uniformity and blocked sprinklers.

Fertilizing and water quality

- Use fresh and clean water.
- If you are using spring water, check the water on its minerals. Often there are high levels of trace element in spring water.
- Fertilize the water each time during irrigation until 1,5 EC fertilizer.
- Keep the pH levels of the water on 6.
- Prevent salt build-up in the pot. The EC in the pot cannot be above 1,2.

USEFUL FACT

Fluor

Lilies are most sensitive for Fluor. This active ingredient can contain in perlite additions to the potting soil. In addition, the fertilizer 'Triple Superphosphate' fluor. Fluor causes bud drop.

Spacing

It is important to give your pot lily enough space during the growing period. This will result in a more compact plant with greener foliage. If the pots are grown too tight, leaves turn yellow (especially on the bottom leaves), weaker plants and a risk for bud drop.

- In a warm climate, after planting keep the pots next to each other to support the 'microclimate'.
- Just before the plants touch each other, you need to space the pots. A rule of thumb is three times the space as before. So, if you first had 45 pots per m², after spacing you want to have 15 pots per m².

Diseases and pests

Check your crops daily. During the cultivation of the pot lilies multiple diseases or deviation can occur. Please pay attention to the following possible problems and how to fight them when they show itself.

- **Penicilium**

What do you see? The bulbs in the crates do have brown rotten spots on their scales. Above those spots a white/blue/green mould can grow.

What is it? It is penicilium, a mould from out of the lily bulb.

What can you do about it? Destroy the bulbs with mould and plant the healthy bulbs as soon as possible.

- **Botrytis**

What do you see? The foliage on both sides have brownish spots which can grow quickly bigger. Flower buds can show brown bumps on the outer flower petals.

What is it? It is Botrytis, a crop fungus.

What can you do about it? Keep the crop dry by spacing the pots. Also arrange more air circulation in the greenhouse. Give extra water in the morning as well.

- **Pythium**

What do you see? At some spaces in the greenhouse lagging growth, hanging foliage and yellow leaving on the bottom of the stem. Flower buds dry out and fall off, remain small or do not get the desired colour. The stem roots have brownish rotting spots.

What is it? It is Pythium, a soil fungus.

What can you do about it? You can prevent this by working with fresh substrate and the pot can drain the water sufficiently. If you face Pythium, limit the crop evaporation.

- **Leaf scorch**

What do you see? The upper foliage looks burned, curly and brownish. With a heavy infestation leaves and flower buds can be lost.

What is it? It is leaf scorch

What can you do about it? Do not use big bulb sizes of varieties which are sensitive for this. We will not recommend you a bulb size which is sensitive. Make sure the potted lily will not face heat and/or big difference in temperature for the first 4 to 6 weeks. Prevent fast growth by putting the Asiatic varieties the first 4 weeks at 12 °C (54F) and the Orientals the first 6 weeks at 15 °C. (59F)

- **Bud drop**

What do you see? Buds of 1-2 cm tall become yellowish and fall off.

What is it? It is bud drop.

What can you do about it? Light is essential for this problem. Create optimal (minimum needed) light intensity in the greenhouse. And make sure you space the pot lilies on time.

CHAPTER 3: DELIVER / POST HARVEST

Ready to harvest

Now the first (bottom) flower buds start to become puffy and colour up, the pot lilies are ready to harvest. Take the following points into account:

- Spray the plants before delivery with Fascination. This will increase the flowering time for a better shelf life.
- Before picking the pots out of the greenhouse, water them very well. The pots need to be soaked wet, so they can keep the quality during transport of the finished product location.
- Keep the plants out of direct sunlight because of evaporation.
- For a good presentation in the store, make sure to clean the pots, remove the yellow leaves from the bottom (if this happened) and use stick-in labels with a picture of the blooming flower.
- Cover the pot with a pot-cover (this can be a coloured one). The cover will also protect the lily again drying out and damage during the transport to the store, and from the store by the consumer
- If the timing was a bit off, store the lilies before delivery in the cooling room. Preferably as short as possible because the risk of bud drop. Acclimatize the lilies first by putting them from the greenhouse to a shaded warehouse around 15 °C.(59F) After that you can put them in the cooling room with a temperature not below 7 °C.(45F) Storing the lilies lower than 7 °C (45F) can cause damage to the foliage and flower buds.
- Try to limit the transport time to the stores as much as you can.
- Preferably transport the pots in trays or carts because of sufficient light and fresh air. If necessary, you can water the trays as well. If the pots will be transported in closed boxes, make sure the boxes will have hole for fresh air. Directly open the boxes after arrival.
- Do not put the plants in direct sunlight during the sale in the stores.