

## THE CULTIVATION OF LILIUM IN SOIL

**! The following information is meant to be advisory. We (VWS) cannot be held responsible for any damage and/or bad results.**

We herewith give you some important items for the cultivation of liliium, which will help you to make your cultivation a success!

### Temperature and moisture levels of the greenhouse soil



Especially during the warmer periods of the year, one should make sure that the soil temperature is kept as low as possible (max 15°C). This will allow proper formation of the bulb roots and stem roots so that the stem will be provided with sufficient moisture during its first elongation. Temperature of the soil can be decreased by using shade nets, covering the soil with straw, rice hulls or sawdust, supplying good ventilation and sprinkling the soil with cold water, start to do this two weeks before planting.

To moisten the bulb roots quickly, it is advisable to provide the soil with a normal amount of water before planting the bulbs.

### Pre-rooting lilies

In cases of higher soil temperatures, it is also advisable to pre-root the bulbs at the proper temperature. One of the following methods can be used for this:

#### Pre-rooting in the box

With this method, the plastic is opened and the boxes are subjected to temperatures of ranging between 9 and 14°C for a few days (max: 7 days). This will allow the initial root formation to take place at the best possible temperature and will greatly improve the rooting that occurs thereafter.

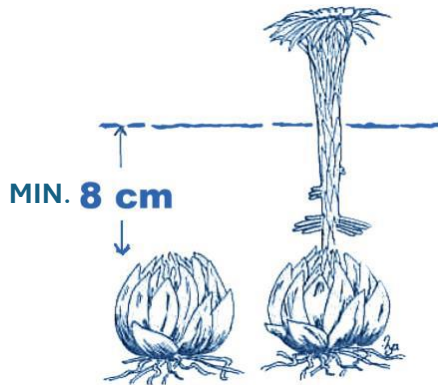
#### Pre-rooting and growing in the box

With this method, the bulbs are planted in boxes and allowed to root in a refrigerated room set at 8-10-14°C. Next, the boxes are placed in the greenhouse where the plants are allowed to mature. If possible, the temperature in autumn is dropped further to 5°C.



### Planting lilies

Plant bulbs in soil having the proper pH, salt content, drainage, soil moisture content, and structure.



To minimize the drying out of the bulbs, either plant the bulbs directly from the box, or spread only a small number of bulbs out onto the planting bed at a time. Plant the bulbs in an upright position. For a winter planting, 6-8 cm. of soil should cover the bulbs; for a summer planting, cover the bulbs with 8-10 cm. of soil. After planting, cover the soil with straw, rice hulls, etc. to reduce heat radiation, drying out of the upper soil layer, and soil structure deterioration. Finally, the planted lily bulbs should be provided with sufficient water at frequent intervals (to prevent soil structure deterioration). In doing so, checking should be done to see that the water is really reaching the bulb roots.

### Well in advance of planting

- Add garden peat to heavy soil to improve consistency.
- Depending on the level of nutrients, the soil can be fertilized -well before planting -with 1 m<sup>3</sup> of old cow manure per 100 m<sup>2</sup>. With nutrient-poor soil, phosphate and potash can be applied in the form of simple fertilizers. Always use fertilizers that are low in fluorine.
- Disinfect the soil once a year by steaming it or treating it with 20 g methyl bromide per m<sup>2</sup> on moisture soil. Disinfect in particular before growing lilies in summer.
- If the soil has a high salt content, flush it well with good water (water low in sodium).
- Use a mix of wood, peat and an organic growing material in the soil to have better bacterial life in the soil.
- Soil with a high pH (higher than 7) should be mixed with material that lowers the pH, e.g. garden peat. If artificial fertilizer is used, choose one that lowers the pH, e.g. ammonium nitrate. Apart from this, a quick-working chelated iron can be worked into the soil before or after planting to prevent iron deficiency which often occurs in crops in such soil. For example liliium show yellow coloration between the veins on the leaves if they do not receive enough iron.



- Add 1 kg of carbonate of lime per m<sup>3</sup> to soil with a low pH ((lower than 6) to increase the pH by a factor of 0.3, and if fertilizing, use a fertilizer such as calcium nitrate, which will increase the pH factor. The recommended pH for Asiatic and longiflorum hybrids: 6-7; Oriental hybrids and speciosum: 5.5-6.5.
- Further, ensure that the soil is light and drains well. This is the best way to combat disease and will have longer stem and good quality.

### Immediately prior to planting

- Disinfect the soil (in addition to the general yearly disinfection recommended above), just prior to planting using etridiazol (Aaterra WP, 35%, 5-10 gram per m<sup>2</sup>), in order to prevent re-infection with Pythium. Dig up the bulbs after flowering and clean the greenhouse for the new planting. Work the agent thoroughly through the top 10 cm of the soil. The highest dose should be used for the heaviest soil.
- Allow frozen bulbs to defrost gradually at 8-10°C for one week.

Depending on cultivar and growing period, the bulbs can be planted in the following densities per m<sup>2</sup>:

Bulb size	Asiatic hybrids/TA	Oriental hybrids	OT hybrids	L/A hybrids	Longiflorum hybrids
9/10	65-85	-	-	-	-
10/12	60-70	-	-	-	55-65
12/14	55-65	55-65	-	50-60	45-55
14/16	50-60	45-55	40-50	40-50	40-50
16/18	40-50	40-50	35-45	40-50	35-45
18/20	-	35-45	30-40	-	-
20/22	-	30-40	25-35	-	-
22 /+	-	25-35	25-35	-	-

### After planting

- Water regularly using the sprinkler system to prevent the top layer from drying out. The stem roots, whose job it is to provide the plant with water, will be in this layer in a few weeks. The first 4 weeks after planting you never give too much water
- Check the water distribution in your sprinkler system regularly.
- Not only under watering is to be avoided, but also overwatering. This causes an oxygen deficiency in the soil, after which the bulbs will die (Pythium).
- During periods when the relative humidity in your greenhouse is constantly high and the leaves of the plants are spreading, the water should preferably be given just above the surface of the soil (fighting Botrytis!).



Try to keep the average glasshouse and soil temperature 15/20°C and the greenhouse not higher than 20-25°C during summer cultivation. Consequently, when planting in summer, keep the following points in mind:

- Reduce greenhouse and soil temperature by ventilating, using screens, cold water and ground covers.
- Plant immediately. Put some wood /straw or other material on the soil after planting to keep soil temperature low and to keep out the influence of the sun

Please note that this is an indication of how to grow lilium, each different circumstances asks for a different approach, therefore if you have questions or you want to know something more about lilium, please do not hesitate to contact VWS

- Keep the soil moist.
- Use disease-free soil (steamed soil).
- During the cultivation of Oriental hybrids, the temperature of the crop can be decreased by using mist equipment.
- Application of pre-germination or cultivation in trays.
- Apply 1 kg of nitrate of lime per 100 m<sup>2</sup> as the shoots emerge.
- If the crop is too light in color, it can be over fertilized with 1 - 2 kg of a quick-acting nitrogen fertilizer up to 3 weeks before flowering. Sprinkle afterwards!.
- The problem of yellow foliage caused by iron deficiency can be solved by spraying with chelated iron.

