

## FORCING TULIPS ON WATER



Tulip forcing on water is a relatively new method of cultivating. Approximately 85% of the tulips in Holland are being forced on water and this share only increases. In a certain number of aspects this new method differs from the traditional forcing method on boxes (9°C cultivation). About five different systems for tulip forcing on water can be distinguished of which the Delta-tray system is the most practical and easiest to apply. Therefore we would like to explain you more about this system:

The Delta-tray system is a dual system existing of a closed lower tray (for the water) and an upper tray with planting holes which can easily be fixed to the lower tray.

However, please note that this method involves more risks than the traditional forcing method on boxes, which especially counts for the storage of the bulbs, for example till March. We therefore advise that you try this new method at first alongside the traditional forcing method on boxes with those varieties that can easily be forced. Problems with 'toppling' and 'sweating' tulips appear in the same way as forcing on water.

The highest benefit of this system is to be obtained by planting every week. Because of the long storage, the dry bulbs need to be checked on sprout and root crown development. Damage during planting should be prevented, which especially counts for the later planting dates.

Advantages of this system with regard to pot soil culture are:

- clean and easy labor (box weighs ± 7 kg instead of 20 kg)
- less cooling space is required (50% less)
- less environmental damage (disinfection of the soil)
- plants will stretch more, the buds will come out more from the leaf which can be an advantage for some varieties

This method requires a different working procedure. We advise you to plant the bulbs weekly instead of planting all bulbs at one time and to maintain a fixed planting day each week.

We hope that this information will be a useful guide for you while taking the first step to forcing on water.

### Treatment

In broad outline the treatment of the bulbs (preparation) for forcing on water can be compared to the preparation for pot soil forcing. After having discussed your wishes, we programme the bulbs and supply a list with the forcing dates. We furthermore advise you concerning the storage temperature of the dry bulbs (between 9 and 2°C).

The relative humidity in the cooling chamber should not be too high in order to avoid the development of penicillium on the bulbs and root development, but also not too low in view of the risk of dried out bulbs. We advise to maintain a relative humidity of 80%.

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Keep an eye on the fastest developing varieties in the cooling chamber regarding the development of sprouts and root crown (varieties like Ad Rem and Leen van der Mark) and possibly lower the temperature.

### Planting

Two to four weeks before putting the bulbs in the greenhouse, depending on the period of the year, the bulbs have to be planted (first sets: 3/4 weeks in advance, later sets: 2 weeks in advance).

Press well against the bulbs so that the root crown gets into contact with the water while filling the tray. On using the Delta-tray the bulbs are not being damaged during planting. Please keep in mind that the bulbs should fit well in the planting holes while planting, so use the right upper tray for the right bulb size: use an upper tray with 127 holes for bulb size 10/11, an upper tray with 118 holes for size 11/12, an 100 hole upper tray for size 12/13 and an upper tray with 80 holes for size 13/15.



This picture shows a method of filling the trays (with trickling hoses).

### Fertilization

After the bulbs have been planted, fill the trays with tap water with a supplement of calcium nitrate and calcium chloride until the required EC has been reached. The composition of the supplement depends on the EC already present in the tap water; especially the calcium nitrate is of importance.

With cultivars that are susceptible to sweating and toppling we advise to fill the trays after planting with an EC of 2,0 and then water them in the greenhouse with an EC of 1,5. For the other cultivars we advise to fill the trays with an EC of 1,7 and further in the greenhouse with an EC of 1,5.

When using tap water without any addition, the growing results will show less quality. The weight of the plants is usually a bit less and the risk of 'sweaters' is higher.

During the rooting period the right fertilization should be given immediately and not only during the greenhouse period because during the rooting period the plants already absorb a lot of nutrients. The fertilization can be given by means of a Dosatron or an A- and B-container.



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