

## Cultivars and their cold periods

A list of the leading cultivars for cut flower production and their required cold periods: the number of weeks (when planted at 9°C) for the various forcing periods.

CULTIVAR	GROUP	BEGIN FORCING BEFORE 17 DEC.	BEGIN FORCING FROM 17 DEC. TO 17 JAN.	BEGIN FORCING FROM 17 JAN. TO 17 FEB.	BEGIN FORCING FROM 17 FEB. TO 17 MARCH
Las Vegas	Bicolor	-	18	17	16
Delnashaugh	Double	-	-	-	17
Dick Wilden	Double	-	16	16	16
Sir Win. Churchill	Double	-	-	16	16
Tahiti	Double	-	-	17	16
Carlton	Large-cupped	16	15	14	14
Fortune	Large-cupped	15	15	14	-
Gigantic Star	Large-cupped	16	15	14	14
Ice Follies	Large-cupped	16	15	15	14
Johann Strauss	Large-cupped	17	17	16	16
Pink Charm	Large-cupped	-	-	15	15
Prof. Einstein	Large-cupped	17	16	16	15
Salome	Large-cupped	-	-	18	18
Martinette	Jonquilla	-	-	17	17
Barrett Browning	Small-cupped	15	15	14	14
Cragford	Tazetta	15	14	14	14
Geranium	Tazetta	-	-	18	17
Dutch Master	Trumpet (yellow)	17	17	16	16
Golden Harvest	Trumpet (yellow)	15	15	14	14
Marieke	Trumpet (yellow)	18	18	17	17
Standard Value	Trumpet (yellow)	-	-	16	16

- = less suitable or totally unsuitable for this forcing period



## Good preparation: the basis for success

### A forcing schedule makes it easier to plan

A forcing schedule can be drawn up based on duration of the recommended cold periods. To plan a harvest on 20 February, for example, the lengths of the cold period and the forcing period have to be subtracted from that date to arrive at the planting date for uncooled bulbs (or the start of the cold period for cooled bulbs). The length of the forcing period depends on the forcing method, the time of year, the cultivar being used, and the greenhouse climate. If the forcing period lasts 3 weeks and the cold period for that cultivar is 16 weeks, 19 weeks will have to be subtracted from the planned flowering date to arrive at the time when cooling or planting at low temperatures should be started.

### SAMPLE FORCING SCHEDULE

- greenhouse period until the end of harvest: 3 weeks
- cold period required by the cultivar: 16 weeks
- put daffodils in rooting room or plant them: 19 weeks before the desired flowering period

### Greenhouse temperature and watering

Daffodils do not need much light, so most greenhouses are suitable for forcing them. Should there not be enough light, however, the plants can become quite tall and limp. As spring approaches, some shading can help prevent excessively high temperatures that would result in more rapid flowering. Forcing in boxes is often done on benches to improve the efficiency of harvesting, but the boxes can also be placed on the ground. Large boxes up to 1 to 1.5 m<sup>2</sup> are positioned by tractor or forklift onto pallets or a tube frame. Watering can be applied in various ways including from overhead. Applying less water results in shorter plants. Humidity must be higher (up to around 90%) for daffodils than for tulips, so insulating the greenhouse with plastic sheeting would be beneficial. However, try to prevent plants from falling over. Forcing at relatively low temperatures (preferably 12-16°C) will yield the best results. This is especially important for double-flowering and red-cupped varieties. The length of the greenhouse period depends on the forcing method, cultivar, shoot length at the time of housing, the time of year in which forcing is done and the greenhouse climate, and will usually last two to three weeks.

## Harvesting with care to maintain good quality

Greenhouses can be used to force bulbs that have been planted either in boxes or in the border soil. Either method always involves harvesting the leaves along with the flowers. This is why it is important to obtain daffodils with long enough 'collars' below the leaves since this leaf collar holds the leaves together.

### Harvest and post-harvest treatment

Daffodils that have been forced into flower or grown in the field specifically for cut flower production are always harvested with the leaves. Only when daffodils are being harvested as a by-product of bulb production are they harvested without the leaves. This is done in order to allow the bulbs to grow larger. The most beautiful bunches are obtained by cutting the stems just above the bulb and including the collar so that the leaves are held together.

Daffodils planted deeply in the soil are more difficult to harvest and often produce very long bunches. Some plant them deeply to prevent frost damage. Daffodils are ready for harvest when their buds have just started to open. This is important to ensure when harvesting daffodils produced by early forcing because otherwise they may not open properly. When forced into flower from February onward, it is possible to harvest them just before the buds open. Double-flowering daffodils have much larger buds and must always be harvested once their spathes have split. (See the photos of maturity stages according to the Association of Dutch Flower Auctions.) Harvested daffodils can be stored in water and kept in refrigerated storage at around 2°C. In the UK daffodil flowers are usually stored dry – no water, even in retail outlets.



## Immediate planting prevents problems

Problems can be prevented by a careful choice of material, proper scheduling, proper planting conditions and immediate planting. Here are the leading diseases and how to deal with them.

CAUSE	SYMPTOMS	PREVENTION/CONTROL
Botrytis species, Stagonospora (smoulder, fungus)	 Dark brown leaf tips. The noses and outer scales of the bulbs display rotten spots often accompanied by small sclerotia.	After receipt of the bulbs, either plant them quickly or remove them from their packaging and store properly under dry conditions. The bulbs of susceptible cultivars (including Tête-à-Tête) should be dipped in a suitable fungicide.
Fusarium (bulb rot, fungus)	 Plants grow crookedly or fail to emerge at all. Tissue inside the bulb, particularly in the lower part, displays greyish brown rot.	Use pathogen-free, fresh soil. Plant bulbs immediately after delivery. Plant the bulbs at low temperatures: 9°C or lower.
'Spread'	Plant falls over before or during harvest.	Schedule properly and do not force too rapidly. Avoid excessively long cold periods and high greenhouse temperatures. Do not plant too deeply, and ensure enough light during forcing.
Flower bud blasting	Flower buds dry out on the stems above the bulb or inside the bulb.	Make sure that the greenhouse temperature is not too high during early forcing. Prevent frost damage. Keep the soil from becoming too dry and keep the RH from becoming too low.



## PRODUCING DAFFODILS FOR CUT FLOWERS

### PRACTICAL TIPS FOR

- DECIDING ON THE RIGHT CULTIVAR AND PRODUCTION SCHEDULING
- EFFECTIVELY TREATING BULBS BEFORE STARTING PRODUCTION
- USING THE RIGHT GROWING CONDITIONS FOR CUT FLOWER PRODUCTION
- PREVENTING PROBLEMS DURING PRODUCTION



