Tulip Forcing

By Jonnie Lazarus

By now, the snow is on the ground and although it may be too late to plant any spring bulbs in your garden, it's not too late to consider forcing a few tulips for early color.

True bulbs, corms, tubers, tuberous roots and rhizomes are collectively and commonly called flower bulbs. Each is a specialized storage organ and morphologically different. But they all share the same basic function, which is to serve as an organ for survival of the species. In this article, we will address only true bulbs, specifically tulips, which are classified into 15 distinct groups:

1. Single early flowering (i.e.: Apricot Beauty & Christmas Dream)
2. Double early flowering (i.e.: Abba& Monte Carlo)
3. Triumph tulips (Kees Nelis, Leen van der mark, Princess Irene)
4. Darwin hybrids (Appledoorn, Ad Rem)
5. Single late
6. Lily-flowered (Aladdin, Ballerina)
7. Fringed (Arma, Hamilton, Red Wing)
8. Viridiflora (green tulips such as Groeenland & Spring Green)
9. Rembrandt tulips (once wildly popular however there are no longer any varieties in this category. Thanks to improved technology, all bulbs previously in this category were found to have virus and were required to be destroyed!)
10. Parrot tulips (Weber's parrot, Flaming Parrot)
11. Double late (Angelique, Up Star)
12. Kaufmanniana (Hearts Delight, Stresa)
13. Fosteriana (Madame Lefeber)
14. Gregii (forced in pots and include Pinocchio & Red Riding Hood)
15. Rare varieties (such as Preastans fusilier, T. tarda, T turkestanica)

Cultivars from groups 1 through 11, and especially the Triumph tulips have qualities that make them suitable for forcing. The cultivars in groups 12- 15 are considered suitable for the garden and containers

Lists of the most popular cultivars used for forcing are readily available. Bulbs are selected for reasons such as flower shape and color, disease resistance, cold requirements, stem length and strength as well has how high the flower is held above the foliage. Tulips are sized by the circumference of the bulb and, generally, those that are the heaviest are used for the earliest forcing.

The maturation cycle of a tulip takes 2 years to complete. There are 3 distinct developmental periods: Leaf forming, flower forming and stretching. The leaf forming period begins in July with the formation of the future growth point (bulb skirts and "A" button. By October, 5-6 bulb skirts are formed and by the following

March, they have grown larger. In April, the central sprout is active and the foliar leaves begin to form. By mid-June, the bulb skirts are filled and there has been a fast increase in their size and weight. Flower forming typically occurs in mid July. By fall, the stretching period has begun. The central sprout has ended the flower formation and by the following spring the apex grows above the soil level. At this time, the leaves and flower will show above ground and the weight of our original bulb is very low. In April- May, the apex is completely stretched and the foliar leaves fully assimilate. During June and July, the apex dies, bulb skirts are cleared out and the eventual forming of seeds will occur. By the time the bulbs are lifted, the leaves, stem and flower of the future plant is already formed within the bulb. In ordinary circumstances, this development is complete in early to mid August, and is referred to as 'Stage G".

Conditions that influence the development of the apical bud include weather conditions during the growing period, time of lifting, temperatures after lifting, the cultivar and the bulb size.

There are cultivars that are very good for very early or early forcing. Some of them include 'Gander', Gander's Rhapsody' and 'Snowstar'. Those appropriate for normal forcing include 'Prominence', Kees Nelis' and 'Lustige Witwe' ("Merry Widow') and cultivars that are especially suitable for late forcing include 'Angelique', 'Rosario' and 'Arma'. Although cultivar selection may be more limited in Alaska than in the Netherlands, I have been able to locate several of those listed.

Although the Dutch growers begin chilling their first tulips on 12 September, it is typical for us to have our first bulbs available a bit later. This is not a problem, rather, it insures us that even the earliest forcing bulbs have reached Stage G by the time they are in our hands and they are ready for cold treatment.

The cold treatment for tulips is an imitation of winter, during which starch, stored in the bulb scales as a food reserve is changed into sugars. These sugars, in turn, serve for food for the plant that is being formed. In principle, the tulip bulb has stored so much food that it only needs water to be able to create a new plant. The cold treatment given the bulbs ensures that when the tulip is actually forced into bloom, the flower stalk will be tall enough. Besides encouraging the growth of the stem, this 'winter' also has a definite influence on the crops rate of growth when being forced in the greenhouse or home. The temperature provided during the cold treatment is about 42 degrees F. The duration depends on the cultivar and when you want the bulbs to come into bloom. Each cultivar has its own requirements for cold and it varies from about 12 to 20 weeks. If given a cold period that is not long enough the tulips remain too short.

Once the tulips have received enough cold, forcing can begin. The number of days in a greenhouse or home varies from about 18 to 30. The duration of this period depends on the time of year for forcing, the cultivar, the number of cold

weeks and the forcing temperature. On an average, the forcing done earlier in the year takes a few more days than later on. If there is not enough cold weeks, the duration in a greenhouse will be increased considerably. The ideal temperature for forcing is 60-62 degrees F. The more time the tulips are given to grow at a leisurely pace, the better the quality will be. If the temperature is increased, the number of days until bloom will decrease, but so will the quality.

Tulips can be forced in all kinds of media from sand to heavy clay/loam soil. Currently, more and more Dutch growers are forcing in water. Special trays have been developed with pins penetrating each bulb to offer support and canals of water below. For large growers there are many advantages to this method including improved hygiene, easier harvest and a cleaner product. For the home forcer, clean gravel to support the bulbs and attention to the water supply should make this technique one worth trying.

Editor's Note:
Jonnie spent ten weeks last spring in The Netherlands in a work study program through Clusius College learning everything there is to know about bulbs. She worked as an apprentice 4 days a week and studied 1 day per week. She tells us that, thanks to this program, "over there she knows nothing, and over here she is an expert". Her photo album reveals a very happy horticulturalist.