

High Quality Gerbera Stems Pay Back -

Dr. Yoseph Shoub

Published - in FloralNews No. 3, 2013 (A Selecta Cut Flowers Publication).

Revised - February 2021.

The common name for the products that we produce and sell is Flowers. Actually we sell **mass of Stems**; which are structures of nodes and internodes - carrying leaves and flowers. Or (*as in Wikipedia*): "Structural axis of land-plants that have vascular lignified tissues for conducting water and minerals throughout the plant, and non-lignified tissues to conduct product of photosynthesis". The 'Stem-nodes' are very important locations; they are the sites on the stem where hormonal processes occur and control the plant's-cell differentiation and the flowering induction. The nodes are the sites where leaves, buds, side-branches, flowers, and fruits are initiated and in some cases even the adventitious roots are generated there. The stem nodes like Crossroads, act also as a structural support for the plant itself.

The quality matter of the gerbera 'Flower-stems' should be our concern: Breeders, Growers, Flower-shops owners, and Consumers. It is our mutual interest to get high quality flowers-stems, as we are producing them, selling them, and expecting to get benefit of them.

The Stems qualities: (length, strength, geotropic-reactions, longevity, leaves color, and diseases- resistance etc.) have a commercial importance, like the qualities of the flowers that they are carrying. If these factors are generally important, with gerbera it is even more critical. The Flower-stem of the gerbera has no structural support (beside the lignified vascular system that conducts water and minerals), therefore it needs distinct care. In the case of the gerbera, and few other cut flowers (some bulbs-plants), we harvest and sell only one internode (the scape).

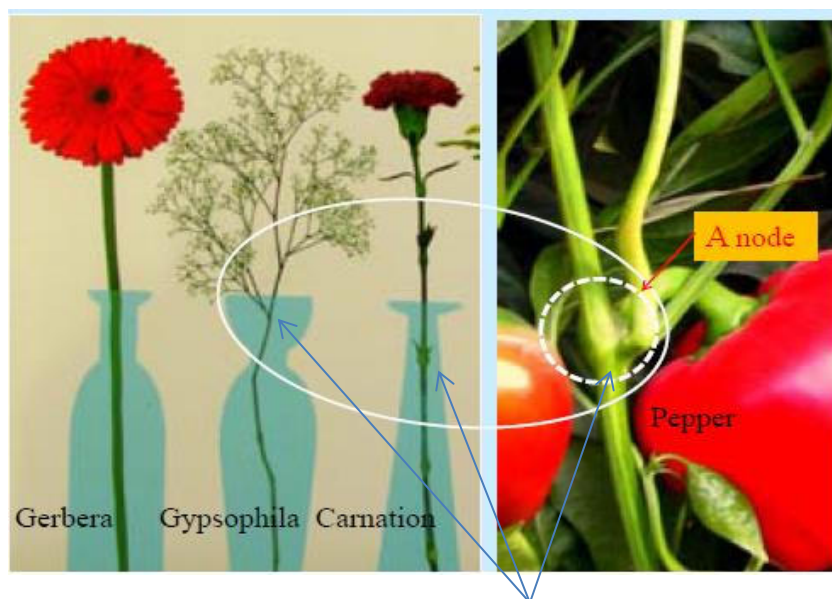


Fig. 1: In most of the plants the 'Stem-nodes' serve as structural support. The flower stem of the gerbera does not have such support.

The gerbera branch is built of very short 4 rigid nodes and 4 rigid internodes (3 - 5 mm long in total). The rigid branch develop at the soil level, carry 4 leaves above the soil level, and above them develop the two very long internodes: 'The Flower-stems'. We cut and sell only these uppermost internodes, they are very long (400 - 800mm), they develop upwards among the leaves, and they carry on their top the flower-head - The Inflorescence.

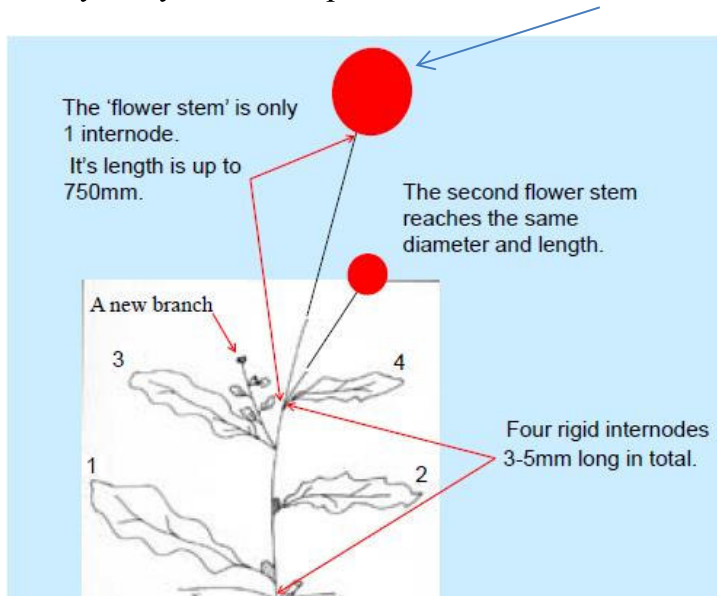


Fig. 2: Sketch of a gerbera branch.

Generally; while the stem is elongated, it is the upper flexible section of it that continues to grow. In gerbera, the upper elongated stem section (10 -15 cm long) below the flower-head, remains flexible and soft, while the lower parts of the stem is gradually lignified and become rigid.

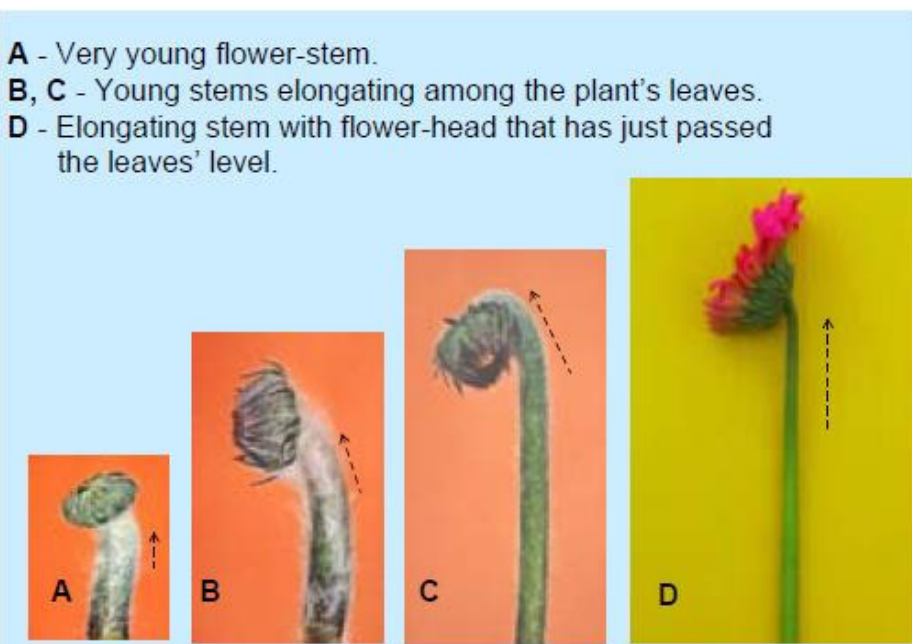


Fig. 3: Normal elongating stages of the gerbera stem (flexible zone - - - -).

If the upper section of the gerbera flowers-stem is not lignified yet, it is not strong enough to carry the heavy inflorescence, it might cause bending-stems-performance.*

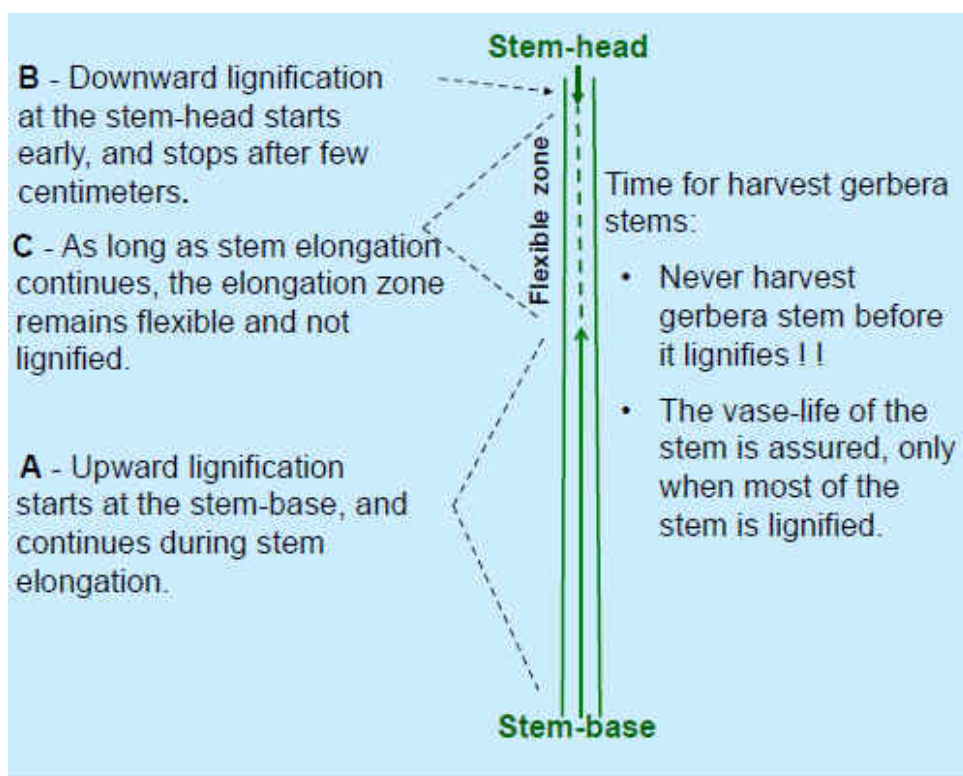


Fig. 4: Sketch of Lignification phases of a gerbera stem.

Thus; it is our goal to select gerbera varieties that produce strong flower stems, which grow and stay in upright position under winter and summer environments. Therefore; we select flower stems that towards harvest time will reach their final length and strength. It will enable them to carry the heavy inflorescence, without bending. These kinds of stems have the qualities that ensure their longevity throughout the long journey from the greenhouse to the vase of the last consumer.

➤ How the stem quality affects our business - some points for our attention:

The Photosyntates products in the gerbera flower stem are limited; as it has no leaves and its structure is built of vascular vessels. Consequently the process of producing well-developed gerbera inflorescence needs fluent feeding supply. So; first of all it means that a premature cut flowers-stems and a premature inflorescences, are not able to continue their growth for achieve their maturation phases, and it means also; that premature stem will have difficulties to carry a heavy gerbera inflorescence, as the flower stem has no structural support. These limits distinguish the gerbera from many other cut flowers - that can be cut and sold in their 'Flower-bud' phases. Thus, we instruct our gerbera growers, that generally the right time for harvest the mature stems is: when 2 rings of male-flowers show their developed stamens.

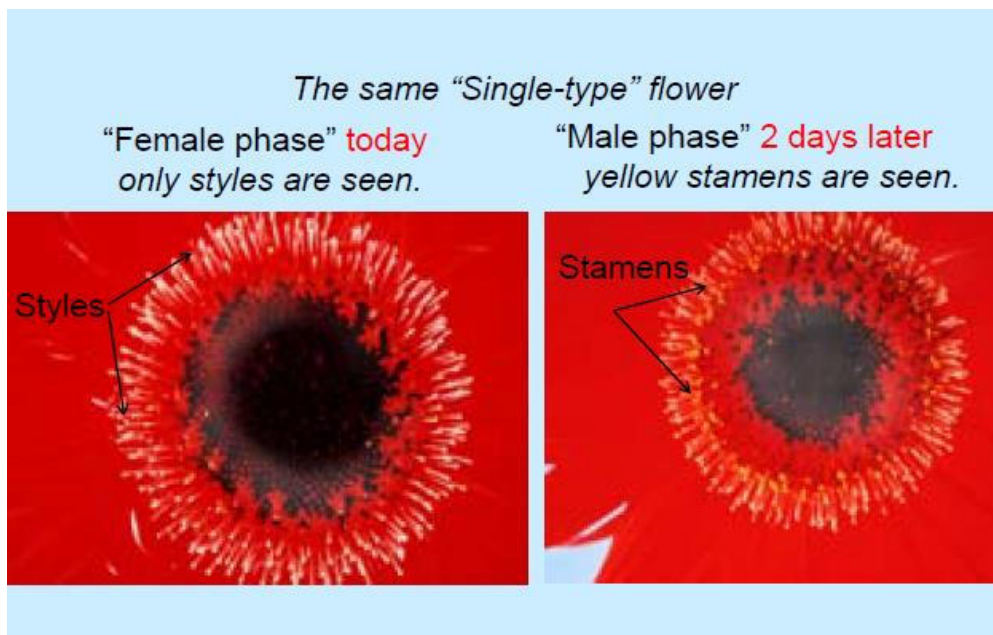


Fig. 5: When 2 circles of male flowers show their mature stamens, it is the right time for harvesting.

This practical instruction arises from the fact that in gerbera, there is A 'Timing-Correlation' between the lignification of the upper flexible' Stem zone, and the 'Male flower maturity phase' on the inflorescence.

> The gerbera is a negative geotropic plant - 'Geotropism' is a growth factor in which 'Gravity' affect the growth-orientation. The negative geotropic character of the gerbera stem finds expression when changes occur in the normal upright growth-orientation. If the stem growth is not interrupted, it will grow continuously in upright position (**Fig. 6 A**).

- A - Flower stems before harvest.
- B - Curve growth of the stem after horizontal shipment.
- C - S-shape growth a few days after placing the stem in the in the vase.

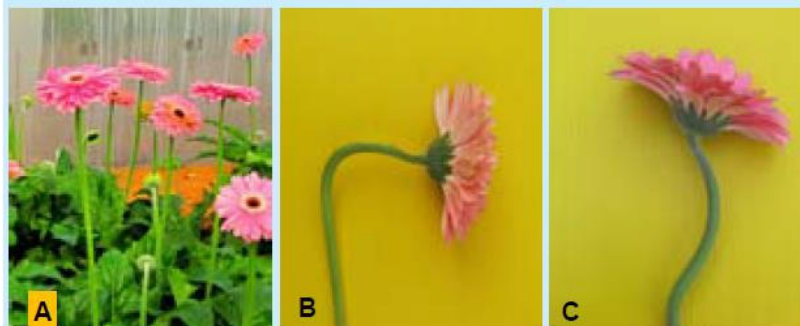


Fig. 6: Negative Geotropic reaction of Flower-stem of sel - Bolivar variety).

Any change in the upright position of the premature gerbera flower-stem, even for a short period, will induce negative geotropic growth phenomena: It will affect the upper flexible stems section to straighten up. It happens when premature cut stems are placed horizontally in the greenhouse, or packed and shipped in horizontal position. The upward-growth phenomena are marketed when the stems are unpacked and placed in the vase (**Fig. 6 B**). A Mature rigid cut gerbera stem, that already finished its elongation phases (*as of our varieties*), is not affected as much. A second active 'S'-shape-growth, induced by the negative geotropic character of the gerbera stem (**Fig. 6 C**), happens after few days in the vase, at the home of the consumer.

> Mature strong stems are able to absorb without difficulties the amount of water needed for renewing the turgor that they have lost during the long shipment. On the contrary, stems that have been cut too early, before reaching their final lignification, have difficulties of absorbing and transporting the water after long shipments, and this fact shortens their vase life.

Epilogue - We are working hard to select gerbera varieties for growers from different countries and climates. We cooperate with Selecta Cut Flowers S.A.U. (our Producers and Marketers) in trialing the new selected varieties in some of these countries: Colombia, Ecuador, Chile, Costa Rica, Europe, Israel, Kenya, China, India, Vietnam, Korea, Taiwan, Japan, etc. Our selecting gerbera criteria designed for achieving the major economic qualities as: Shining saleable flowers of different types and colors with year-round production of strong and long stems, resistant to Botrytis and having long vase life. The plants form of our varieties is open to light and aeration, carrying reasonable number of active leaves, resistant to Mildew, and above all having well-established root system. Our new 'Cold resistant varieties' - are not sensitive to the winter-nights-low temperatures occur in the Mediterranean and in Subtropical countries, and it saves the heating costs for the growers.. These basic qualities - Plus the professional information we are passing to our growers all over the world - (*You ask - I answer*)- produce and preserve the positive feedback from growers all over, from Colombia through Africa, China, India to Japan. **

Dr. Yoseph Shoub is an agronomist and a gerbera breeder. You can reach him at gerbera1@zahav.net.il

For more information visit www.gerberaisrael.com for "Gerbera Practice & Theory Selected chapters"

* Bending-stems-performance - At harvest time; the net weight of the inflorescence of the recently gerbera varieties, is 15 to 35 gram, while the inflorescence of the original species - *Gerbera jamesonii* - is only 2.5 to 7 gram. Furthermore; under greenhouse-conditions the stem elongation rhythm is very fast, a fact that makes some difficulties for the growers to identify the exact maturation stage of the gerbera flower-stem, regarding its proper harvesting time.

** Due to their positive horticultural qualities; our (shb) varieties are long-lasting in the gerbera Catalogues of Selecta-One.