

Queen® stands out for ethylene resistance

New study shows Knud Jepsen a/s *Kalanchoe* have the longest, flowering life

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Ethylene is a well-known headache for manufacturers of flowering pot plants, such as *Kalanchoe*, which are susceptible to loss of market value when exposed to the gas. Unwilling to accept the negative impact of ethylene on flowering, Knud Jepsen a/s in Denmark has worked to develop ethylene-resistant varieties of Queen® *Kalanchoe*.

The hard work has paid off. In a comparative study, the results confirm the outstanding low ethylene sensitivity of 15 Queen® varieties.

A natural gas

Ethylene is present in car exhaust fumes and cigarette smoke, but is also a natural product of ripening fruit and vegetables, conifers and pot plants such as *Solanum* and *Capsicum*. As a consequence, many *Kalanchoe* plants are exposed to ethylene at some stage of the journey to the consumer, whether during transport or in stores.

Although *Kalanchoe* is regarded as one of the most resilient pot plants, the longevity of most varieties is severely limited by their sensitivity to ethylene.

Study of 51 varieties

The study, conducted by Nissen Consult in collaboration with Knud Jepsen a/s, examined the ethylene sensitivity of 51 *Kalanchoe* varieties, categorised in five groups and produced by the four largest manufacturers in Europe. All varieties have many-petal flowers, are grown under similar conditions, and are sold on the European market.

Sensitivity was measured after the flowering shoots were exposed to ethylene. A scale of one to five was used for the visual evaluation of the open flowers, as follows:

1. No reaction (no symptoms)
2. 10% closed (the flowers are slightly closed or have slightly curled petals)
3. 30% closed (the flowers are moderately closed and show early signs of withering)
4. 70% closed (the flowers are clearly closed with advanced withering)
5. 100% closed (the flowers are completely closed and withered)

Top-performing Queen®

The results of the visual evaluation are shown in the table below:

Group	Varieties tested	Manufacturer	Average ethylene sensitivity
Queen® RoseFlowers®	9	Knud Jepsen a/s	1.8
Queen® MoreFlowers®	6		
Calandiva®	18	Fides B.V.	3.1
Rosalina®	11	K.P. Holland B.V.	4.2
Diamond®	7	Slijkerman B.V.	4.4

The evaluation revealed that Queen® MoreFlowers® have outstandingly high ethylene resistance, with only one of the varieties investigated showing slight signs of sensitivity. This *Kalanchoe* group, therefore, has the maximal flowering lifetime. Queen® RoseFlowers® are rated second, with an average ethylene sensitivity of 2.2. Varieties with this level of resistance will regain their full bloom potential in the shop despite exposure to ethylene. In other words, these varieties have a built-in guarantee that high ethylene doses have no impact on their ornamental value and lifetime.

By comparison, the other three groups of *Kalanchoe* show ethylene sensitivity that increases from above average in the Fides varieties to high sensitivity in the varieties from K.P. Holland and Slijkerman. Varieties with this level of sensitivity will be unlikely to recover if exposed to ethylene. Their ornamental value and durability will already be visible in the shop in the form of more or less closed blooms.

The reason why the two Queen® groups show such high tolerance is that ethylene sensitivity has long been a focus of the development activities at Knud Jepsen a/s. As a result, only genotypes with blooms that display ethylene resistance are selected and used for further development.