

# Evaluation and representation of ethylene effect on vase life and quality of rose (*Rosa hybrida*) cv. Vendela

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## Abstract

In this study, changes in the quality and vase life of cut roses cv. Vendela generated by the presence and influence of ethylene were analyzed and represented. A static experiment was proposed to determine vase life by putting fresh floral stems in hermetic containers and introducing different amounts of ethylene in a range of concentrations from 0 up to 7  $\mu\text{L L}^{-1}$  at 14 °C. The main ethylene response for Vendela roses was the petal abscission. Within the range 0–4  $\mu\text{L L}^{-1}$  vase life decreases as the ethylene concentration increases. At ethylene concentrations over 4  $\mu\text{L L}^{-1}$ , vase life did not change significantly. The results thus obtained allowed to establish that the flower vase life can be considered as a function of the ethylene concentration in the surrounding atmosphere up to a maximum value (5  $\mu\text{L L}^{-1}$ ). From experimental data, a mathematical model to represent the cumulative petal fall (%CPF) as a function of exogenous ethylene was successfully adjusted. By using the above equation and by considering the senescence stage as that corresponding to %CPF = 5% a vase life model was established. The model can satisfactorily represent the vase life of cut Vendela roses at different ethylene concentrations and it constitutes a novel and useful tool that can be used to improve postharvest handling and storage and reduce losses of this type of flower.