MODELLING VISUAL QUALITY OF KALANCHOE BLOSSFELDIANA: INFLUENCE OF CULTIVAR AND POT SIZE

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Keywords

External quality, models, ornamentals, plant height, time to flower

Abstract

In a previous study a dynamic model for plant height, number of flowering shoots and cropping duration was developed and validated for one kalanchoe cultivar ('Anatole') and one pot size (10.5 cm). Such an explanatory model is an essential tool for production planning, optimal greenhouse control and scenario studies in kalanchoe. However, before it can be generally applied it must be extended to other cultivars and pot sizes. Two experiments (winter and summer) were conducted at a commercial nursery to calibrate the existing model for eight contrasting cultivars ('Alexandra', 'Anatole', 'Debbie', 'Delia', 'Mie', 'Pandora', 'Tenorio' and 'Toleda') and for two pot sizes (7 and 10.5 cm). The studied cultivars showed a strong variation in the plant height (from 10.2 to 25.6 cm), in the number of flowering shoots (from 15 to 19) and in the reaction time (from 55 to 64 days from start of short-day period until harvest stage) when grown under the same conditions (values provided are for cultivation in summer in 10.5 cm pots). Concerning pot size most of the observed effects were closely related to the cultivation practices, which in turn already corresponded to standard data input into the existing model. For instance, lower initial number of internodes and reduced duration of long-day period for smaller pots, leading to shorter plants. Additionally, growing plants in smaller pots resulted in a longer reaction time (1 to 14 days, depending on cultivar), especially during winter (on average 8 days). This could reflect the importance of the intercepted light integral in the reaction time, which was lower due to the lower initial leaf area of the plants grown in smaller pots. It was shown that the responses to temperature and light are common to all cultivars. Thus, the framework of the explanatory model previously developed for 'Anatole' was

successfully adapted to other kalanchoe cultivars and pot sizes. When implementing this dynamic model to predict plant height and reaction time for different cultivars in multiple growth conditions, only few parameters must be quantified and compared to the reference cultivar at one light and temperature condition (i.e. average maximum vegetative internode length, internode appearance rate, generative length and reaction time).