Title The application of UAE technique in postharvest studies of cut flowers

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Citation ISHS Acta Horticulturae 847:45-50. 2009.

Keyword acoustic emissions; cavitation; cavitation potential; lignifications; vase life; water relations; water stress management

Abstract

The use of ultrasonic acoustic emission technique (UAE) in studying water relations of cut flowers during post harvest life is discussed in this paper. Experiments with different flower species have shown that relevant UAE signals can be detected only in cut flowers with a certain degree of lignification of their conduits (e.g. in roses, chrysanthemums, marigolds or sunflowers). Apart from anatomical parameters (e.g. structure and size of xylem vessels) and morphological parameters (leaf area, development of stems and flowers), the occurrence of cavitations strongly depends on climatic factors affecting water relations and on post harvest handling of cut flowers (e.g. re-cutting or application of fresh flower food). In summary, the UAE technique provides possibilities to study and test the efficiency of various mechanisms and the impact of conditions in the post harvest processes. The limited 'cavitation potential' as well as refilling of embolized vessels are issues, which make it question¬able whether conclusions regarding stress intensity can be drawn from short term measurements of the cavitation rate. Therefore, the study of water relations with the UAE technique is recommended during long term test series only, which should include a systematic alteration of the studied factors. From such AE profiles, information about water relations of test objects and their water stress management can be deduced.