

Title A neural network technique to develop a vase life prediction model of cut roses
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Abstract

We developed neural network (NN) models using environmental, morphological, and physiological parameters to predict the vase life of cut roses grown in a greenhouse. These parameters were obtained during the growing and pre-marketing stages. A back-propagation training algorithm was used to develop the vase life prediction model. The network consisted of 29, 26, and 1 processing units in the input, hidden, and output layers, respectively. The NN was trained using the data of 123 cut 'Asami Red' roses and was validated using other data obtained from 30 cut roses. The results showed that the NN model had a relatively higher predictability ($r^2 = 0.886$, RMSEP = 0.984) between the predicted and observed values. Mixed data of rose cultivars 'Asami Red', 'Bridal Pink' and 'Sonia' were used to train the model. The validated model using the test data of the three cultivars still showed a good predictability ($r^2 = 0.835$, RMSEP = 1.126). The analyses showed that the NN model can predict the vase life of cut roses better than traditional statistical methods. Thus, we conclude that the NN is a superior approach to predict and guarantee the vase life of cut roses.