

Effect of Exogenous Application of Ascorbic Acid on Leaf Discoloration in Chrysanthemum

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Abstract—*Chrysanthemum* (*Chrysanthemum x morifolium* Ramat.) is the second largest cut flower grown all over the world. *Chrysanthemum* flowers are most valued in the domestic market as well as the foreign market for pot mums, flower arrangement, bouquet formation and garland preparation. The economic value of flower crops depends on their visual appearance and post-harvest quality of cut flowers. *Chrysanthemum* cut flowers have relatively longer vase life but premature foliage discoloration in terms of yellowing, browning and wilting is a major problem during postharvest. Spontaneous leaf discoloration of cut stems prior to the onset of petal senescence reduces quality as well vase life. Leaf wilting is the major cause of poor quality in *chrysanthemum* cut flowers. Various chemical preservatives has been reported by several authors to delay petal senescence and extend the vase life of *chrysanthemum* and delaying leaf senescence in *chrysanthemum*. Antioxidants such as ascorbic acid, glutathione, carotenoids, anthocyanin etc. play a pivotal role in the physiological processes like photosynthesis, photo-protection, cell division, plant growth, stress responses and regulation of senescence. Use of antioxidants as chemical preservatives in delaying leaf senescence is entirely new approach. Therefore, the present study was conducted at the Division of Floriculture and Landscaping, ICAR-Indian Agricultural Research Institute, New Delhi with an objective of reducing leaf discoloration in spray cultivars. Cut flower stems of *chrysanthemum* cv. Yellow gold and cv. Red gold (spray varieties) were harvested from research farm in the morning and were immediately placed in a bucket containing pure water to keep them turgid and were brought to the laboratory. These stems were cut back to uniform length and the leaves from the lower 1/3rd portion of the stem were removed. The cut flowers were given various treatments consisting of spraying with 50, 100, 150 ppm ascorbic acid or keeping in vase solution containing 4% sucrose alone or in combination with 50, 100, 150 ppm ascorbic acid and were compared with control. The experiment was laid out in Completely Randomized Design with eight treatments replicated thrice with three cut stems per replication. It was observed that significant increase in vase life and minimum weight change in cv. Yellow Gold and Red Gold was recorded after spraying cut flowers with 100ppm ascorbic acid. Maximum solution uptake was observed in cv. Yellow Gold with 50ppm ascorbic acid spray. Minimum leaf browning was observed in cv. Yellow Gold when flowers were held a solution containing 150 ppm ascorbic acid + 4% Sucrose. No Leaf yellowing was not observed in cv. Red gold when flowers were sprayed with 150ppm ascorbic acid. Maximum chlorophyll 'a', chlorophyll 'b' and total chlorophyll content was found in cv. Yellow Gold and Red Gold flowers with 50 ppm ascorbic acid spray.