

Title Physico-chemical quality of mineral and organically fertilized *Cosmos caudatus* during storage

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Abstract

Cultural practices such as nutrient application are claimed to be factors influencing quality of fresh leafy vegetables at harvest and postharvest and shelflife. Source of fertilizer has been reported to influence phytochemical content such as vitamins and antioxidant activities in the products. *Cosmos caudatus* is a leafy herbaceous and undergoes rapid quality changes after harvest. Rapid deterioration after harvest can be triggered by high temperatures in the field during harvest and storage. A study was conducted to determine the effect of fertilizer sources and hydrocooling treatment on postharvest quality of *Cosmos caudatus*. Plants were fertilized using organic-base fertilizer (8% N : 8% P₂O₅ : 8% K₂O) and inorganic fertilizer (15% N : 15% P₂O₅: 15% K₂O) at rate of 90 kg ha⁻¹ N and placed under rain shelter and irrigated manually. The shoots were harvested after 8 weeks of planting and subjected to hydro-cooled for 12 min at 2°C in hydro-cooling chamber. Control treatment, the shoots were left non-hydro cooled at ambient temperature for 12 min. The samples were then packed and sealed in polyethylene bag and stored at 7°C. Samples were analyzed for visual appearance, water loss, pH, vitamin C, chlorophylls and carotenoids contents at day 0, 2, 4 and 6. The experiment was arranged in RCBD and data was analyzed using ANOVA. Means was separated using LSD. Regardless fertilizer sources used, water loss, visual appearance, pH and total chlorophyll content of *C. caudatus*, was not affected. However, vitamin C and carotenoids contents of organic-fertilized plants were significantly higher than inorganic-fertilized plants. Hydro-cooling treatment has significant effect on the young shoot quality where less water loss, better visual appearance and higher content of vitamin C, total chlorophyll and carotenoids in hydro-cooled shoot as compared to control. The quality of *C. caudatus* shoot decrease as storage day progressed. There was no significant interaction in fertilizer sources x hydro-cooling and fertilizer type x storage day for water loss, visual appearance, pH, vitamin C and total chlorophyll, except for carotenoids of *C. caudatus* shoot. However, there was significant interaction in hydro-cooling x storage day for all the quality except pH of the shoot. All the quality of *C. caudatus* determined was not affected by fertilizer x hydro-cooling x storage day interaction. In short, organic

fertilizer could enhance richer vitamin C and carotenoids content in *C. caudatus* which is essential while consuming salad. Hydrocooling is essential to retain postharvest quality of this shoot.