عنوان مقاله:

Growth, Physiological and Metabolic Responses of Gerbera (Gerbera jamesonii L.) to Various Combinations of Calcium and Humic Acid Levels

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خلاصه مقاله:

Gerbera is one of the significant cut flower crops worldwide suffering from loss of flower quality induced mainly by Calcium (Ca) deficiency. In this research, the influence of Humic Acid (HA) and Ca in nutrient solution was studied on the growth parameters of gerbera. A completely randomized hydroponic experiment was designed by adding HA (۰, ۱۰۰, ۵۰۰, and ۱,۰۰۰ mg L-۱) and Ca (۳.۵ and ۷ meq L-۱ nutrient solution) to the nutrient solution of gerbera, with three replications. The effects of the treatments were evaluated on the growth, protein content, proline content, transpiration, CO۲ assimilation, photosynthesis, SPAD value, number of harvested flower, and antioxidant activity in gerbera cv. Malibu. Results showed that decreasing Ca level to ۳.۵ meq L-۱ decreased Superoxide Dismutase (SOD), Peroxidase (POD), and CO۲ assimilation. However, this treatment caused an increase in Malondialdehyde (MDA), protein content, proline content, chlorophyll, and photosynthesis. Transpiration and number of harvested flowers were not affected by Ca concentration significantly. The highest level of HA (۱,۰۰۰ mg L-۱) increased POD and transpiration (۳۰ and ۱۱%, respectively). However, SOD and protein content increased at ۵۰۰ and ۱,۰۰۰ mg L-۱ HA levels. When HA was accompanied with Ca, SPAD value, transpiration, and CO۲ assimilation were improved, especially at high levels of HA (۵۰۰ and ۱,۰۰۰ mg L-۱) and higher level of Ca (۷ meq L-۱ Ca). The results suggested that HA could increase the number of harvested flowers and improve plant health by enhancing the plant enzymatic antioxidant defense system.

کلمات کلیدی:

Malondialdehyde, Nutrient deficiency, Peroxidase, Stomatal conductance, Superoxide dismutase, Transpiration.