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Pepper plants growth, yield, photosynthetic pigments, and total phenols as affected by foliar application of potassium under different salinity irrigation water

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ABSTRACT

Irrigation with high salinity water influences plant growth, production of photosynthetic pigments and total phenols, leading to reduction in crop yield and quality. The objective of this study was to investigate the effects of potassium (K) foliar application in mitigating the negative effects of salt stress on pepper plants. A greenhouse experiment was conducted to investigate the effects of foliar application of potassium (K) on pepper plants grown with different salinity water irrigation (3000 and 6000 ppm as compared to tap water with salinity level of 300 ppm). Irrigation using high salinity water decreased plant height, biomass production, and fruit yield as compared to those of the plants irrigated by tap water. Photosynthetic pigments and total phenols increased in the former as compared to those of the latter plants. The most serious affect was for the plants under highest salinity irrigation (6000 ppm) as compared to that of the plants under moderate salinity irrigation (3000 ppm). Foliar application of potassium mono phosphate (KMP) at 200ppm concentration increased the plant growth, biomass production, and fruit yield. Chlorophyll_a content and total phenols increased significantly with foliar application of 100 ppm KMP. Further increase in foliar KMP concentration to 200 ppm had no significant benefits on photosynthetic pigments and total phenols content. This study demonstrated that foliar application of KMP, to some extent, mitigated the negative effects of high salinity water irrigation on pepper plant growth and fruit yield.

KEYWORDS

Diluted Sea Water; Potassium Mono Phosphate, Chlorophyll_a; Chlorophyll_b; Carotenoids, Potassium Nutrition

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